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DECLARATION UNDER 37 CFR 1.131

I, Jessica W. Smith, do declare and say:

1. I reside at 1529 Parkview Drive, Garland, Texas 75043 and have since March 2000.
2. I am Corporate Counsel for Alcatel USA, authorized to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith.
3. Attached as Exhibit "A" is a document entitled "Network Inventory Management" which shows conception of the invention at least prior to November 16, 1999.
4. An Invention Disclosure Form was received in the Alcatel Intellectual Property Department that reflects a preparation date of July 11, 2000.
5. Attached as Exhibit "B" is a License for Foreign Filing requested on July 18, 2000 and received in the Alcatel Intellectual Property Department on August 9, 2000.
6. The Invention Disclosure Form was presented to the Alcatel USA TND Patent Committee on November 22, 2000 for a decision on filing.
7. The Invention Disclosure Form was outsourced to patent counsel on January 23, 2001 for preparation of the utility application.
6. The utility application was completed and filed on April 11, 2001.

I further declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further that all these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Date: June 12, 2006

/Jessica W. Smith/
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EXHIBIT "A"

NETWORK INVENTORY MANAGEMENT (R2.0) TRS

Abstract: This Technical Requirements Specification (TRS) describes the architecture, model analysis, and design specifications for Network (Equipment) Inventory Management, Release R2.0.

Keywords: NIM, Physical Equipment (Asset) Management, online inventory, offline inventory

Location:

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Revision History

Edition	Description of Change
01-It01	Initial release for review
01-It02	Release after the access to NMF document, discussions with development team. Aligned with updated draft (R6) of SIF document
01-It03	MOCS is combined into this TRS, TRS name changed to NIM, and the section of scenarios added
01-It04	Updated document with feedback from comments. Internal and Premisys' comments addressed
02-It01	Rewrite based on 1320 NM RA.x. (downstream Q3 interface ANS-IM)

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1 INTRODUCTION

1.1 Purpose and Scope

This TRS comprises the detailed technical requirements for 1320 NM NIM (Network Inventory Management) and PAM (Physical Asset Management) for its release 2. It also proposes a functional architecture of PAM. This document is mainly driven by two factors – the industry standards for the future telecommunication network management and the current customers application needs.

1.2 Traceability

In terms of those requirements for the physical asset inventory management from user's perspective, this document intends to align them with the working document "Draft – Common Applications Requirements Document for Inventory Management" at SIF [2.], the Preliminary Product Requirement in PFD Inventory [8.] and the Specifications and Requirements for SMOCS [5.] if applicable.

HLD and Test Design Documents relating to this TRS shall refer to requirements listed herein by the respective requirement number.

1.3 Requirements Changes

Once approved, this document constitutes a firm set of requirements for the product design. Modifications to the product design during development that conflict with these requirements are not permitted. In such instances, this document must be updated and changes approved prior to their implementation.

1.4 References

1. Telecom Operations Map, TM Forum GB910 (Evaluation Version Release 1.0), October 1998
2. Draft (R6) — Common Applications Requirements Document for Inventory Management (Contribution to SONET Interoperability Forum), SIF-CA-9719-090R6, Feb. 1998
3. Network Management Detailed Operations Map, NMF GB908 (Draft Issue 0.9), March 1998
4. Bellcore SR-TSV-002678, EML Applications for Configuration Management: Inventory Notification and Query – Functional Description, April 1994.
5. Specifications and Requirements for SMOCS (Synchronous Multiplex Optical Communication System)
6. 1320 NM Equipment Management Domain Renaissance TRS, Alcatel 3AL-55650-1010-DTZZA
7. 1320 NM RA.x Architecture, 1999
8. 1320 NM R06.0X.00 Product Feature Document, Alcatel 3AL 55650 0006 DTZZA

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9. ITU-T Recommendation M.3100, Generic Network Information Model, 1995
10. 1680 OGX Q3 Agent MOCS R.01.05, 1999

1.5 Definitions

ANS-IM	Alcatel Network Systems - Information Model
AOM	Alcatel Object Model
CLEI	Common Language Equipment Identifier
CM	Circuit Management
DB	Data Base
EML	Element Management Layer
EMS	Element Management System
FDN	Fully Distinguished Name
GUI	Graphical User Interface
MIB	Management Information Base
NE	Network Element
NIM	Network Inventory Management
NMF	Network Management Forum
NML	Network Management Layer
NMS	Network Management System
OWW	OpenView Window
PAM	Physical Asset Management
SIF	SONET Interoperability Forum
SMOCS	Synchronous Multiplex Optical Communication System
SONET	Synchronous Optical NETwork
TMN	Telecommunications Management Network

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2 GENERAL DESCRIPTION

2.1 overview

Network Inventory Management (NIM) and Physical Asset Management (PAM) (or Physical Asset Management Inventory management) are essential to any modern telecommunication network management system, such as 1320NM. Roughly speaking, NIM and PAM are concerned with network overall resource management in general, and physical equipment resource administration and configuration management in particular. However, there are currently several different meanings and uses of the terms of "network inventory management" and "physical asset management" in different context, making these terms very confusing. In view of this, it is necessary to first clearly define and understand the terms of "network inventory management" and "physical asset management" described in this document, at least in 1320NM context, in order to facilitate the domain analysis, technical requirement specification, and peer discussion.

TM Forum document Telecomm Operations Map [1] introduce the network inventory management at process level from SP viewpoint, which states that NIM process encompasses anything to do with physical equipment and the administration of this equipment. The process includes the installation and acceptance of equipment, with the physical configuration of the network, but also with handling of spare parts and the repair process. Software updates are also responsibility of this process. Bellcore's standards [4] describes the inventory management in terms not only of physical equipment, but also of termination points, cross connections, and so on, which is a unified and abstract network inventory resource store where other NML applications can access network resource. On the other hand, SIF document [2] provides a set of detailed functional requirements on physical asset management from user's viewpoint. On the application project side, the customers specifications and requirements on physical asset management (SMOCS, for example) is very close to what described in SIF document [2]. In summary, the fundamental requirements for NIM and PAM come basically from two different aspects – equipment resource administration and configuration management, and the unified persistent network inventory resource storage model. The former is from management application functionality requirement viewpoint while the latter is from system architectural viewpoint.

Originally, each NML application was modeled, designed and developed separately. As a result, each NML application had to be responsible for store of its own inventory resource data, as shown in Figure 1. However, an alternative architectural framework for NML applications is illustrated in Figure 2.

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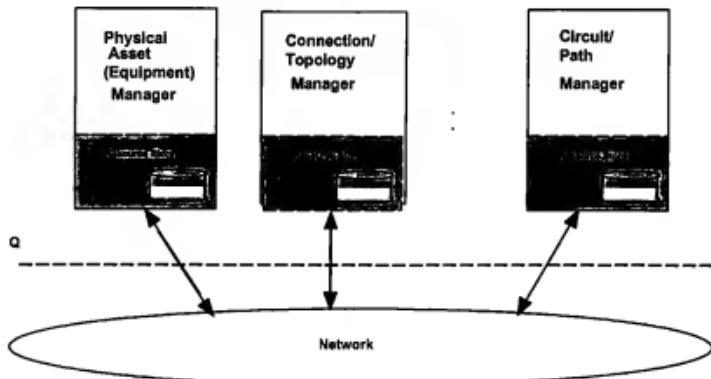


FIGURE 1: Example of Original Architectural Approach

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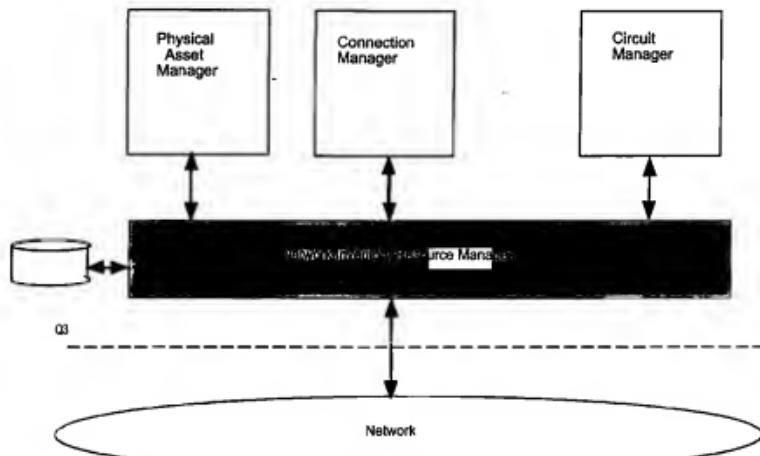


FIGURE 2: Example of An Alternative Architectural Approach

The advantages of the second architectural approach shown in Figure 2 are listed as follows:

1. Reduce the duplicate work in the effort of building each NML application's own resource data store.
2. The common network inventory resource store management is consistent, unified and system-wide.
3. Facilitate quick deployment of new NML applications on new resource objects as well as new NML applications on existing resource objects, once this architectural framework is in place.
4. The inter-object behaviors both within each individual NML application and among different NML applications are taken care of by network inventory resource manager, which makes the interactions across NML applications very neat, unified and simplified.

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5. Hide the Vendor-specific DBMS features as much as possible by providing an independent inventory resource management interface to all other NML applications.

A potential drawback of this second architectural approach could be performance and scaling issues since the network resource inventory manager becomes a core component in the system and could be resource intensive. A possible and effective solution to these issues could be distributed network resource inventory management, which can be supported and implemented straightforward by employing distributed OODBS in network resource inventory management.

It should be pointed out that the network resource store provided by the network resource inventory manager shown in Figure 2 is not intended to be the global internal repository for *all* NML applications. Rather, it should be regarded as a core network resource inventory repository for some popular NML applications including physical asset management, topology management and circuit management (as illustrated in Figure 2) which exhibit many relationships between their conceptual information models. Thus, the cohesion can be achieved via a common core network resource repository for those "correlated" NML applications, which can significantly simplify the inter-objects behavior between different "correlated" NML applications.

2.2 TERMINOLOGY DEFINITION

Based on the discussion above, the following terminology definition is provided which will be used exclusively in this document, where the conceptual architecture shown in Figure 2 provides the context for the following definition.

2.2.1 Definition of Network Inventory Management (NIM)

The term "network inventory management" (or equivalently, "network resource inventory management", "inventory management") is a NML application which performs network resource inventory management and provides a core network resource repository for several other popular NML applications (as shown in Figure 2). This network resource repository is the place where those NML applications to access their resource data. NIM functionality is mainly covered by network resource inventory manager illustrated in Figure 2.

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2.2.2 Definition of Physical Asset Management (PAM)

The term of "physical asset management" (or equivalently, "asset management", "physical asset inventory management") is a NML application which performs the network equipment resource administration and configuration (equipment provisioning) management. The equipment administration includes both installed equipment and not-installed equipment (such as the equipment items in stock and in repair). PAM functionality is mainly covered by physical asset manager illustrated in Figure 2. (The GUI component of the physical asset management is additional to physical asset manager component, and is not mentioned here for simplicity.)

Equipment resource administration and configuration management, (also called physical asset management) is usually referred to the network resource management of the type 1 listed above. The other two types are subject to the domains of circuit management and connection management, and the topology management.

Please notice that the definitions given here are a little different from those used in NIM R1.0.

2.3 CURRENT OBJECTIVE

This document release will address requirements for NIM and PAM. While the full capacity of NIM to support PAM will be addressed, additional capacity of NIM to support other NML applications (such as topology management, circuit management, etc.) may be added in future releases. The EML/NML interface addressed is Q3 (ANS-IM), while interface AOM will be addressed in future releases. Figure 3 illustrates the current objective of this release, in which the components with solid edges are addressed.

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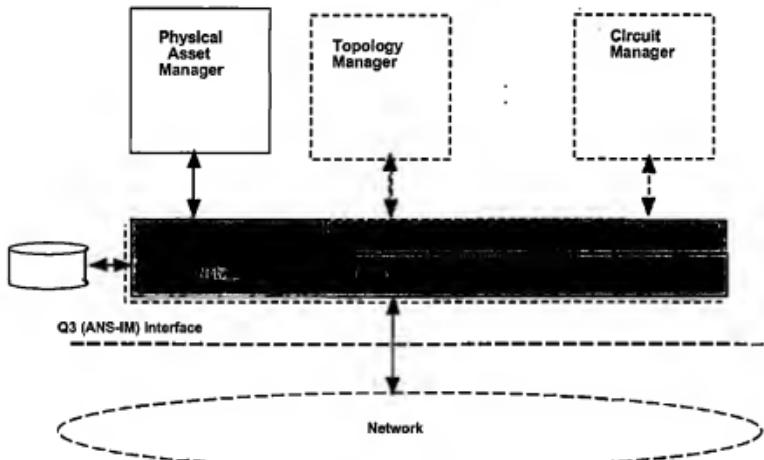


FIGURE 3: Illustration of Current Objective

3 users' Requirements

This section provides a comprehensive set of detailed requirements for NML physical inventory management applications from user's point of view. Impacts of user's requirements on the modeling of the network inventory management system will be pointed out. The requirements are those paragraphs which have requirement identifiers preceding them. The functionality requirements described here for the network physical inventory management will be a base for PAM object model which will be defined later.

3.1 general requirements

[NIM0001] The PAM application shall be responsible for physical equipment management and administration for both online equipment inventory items, and offline equipment inventory items.

[NIM0002] The PAM application shall be responsible for NE software management and updates.

[NIM0003] Online inventory items for PAM shall include boards, equipment holder bays, shelves, slots, software, NEs, equipment protection groups, and EMSs.

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- [NIM0004] Offline inventory items include boards and equipment holder bays and shelves.
- [NIM0005] During installation and de-installation of equipment items in the network, their online view and offline view shall be aligned as much as possible, unless the equipment items do not provide necessary information for such alignment.
- [NIM0006] The PAM application shall be responsible for online equipment item configuration and provisioning which is not associated with NE/EMS specific feature and knowledge.
- [NIM0008] The PAM application shall be responsible for management of equipment items in repair process.
- [NIM0009] The PAM application shall be responsible for management of equipment items in stock (warehouse).
- [NIM0010] The PAM application shall get alerted when stock reaches given thresholds, and the thresholds shall be easily set via PAM GUI by operator.
- [NIM0011] The PAM application shall be able to keep track of temporally removed equipment items (including faulty parts).
- [NIM0012] Two types of PAM GUI, at least, shall be provided: table display and equipment graphic display. Table display shall provide query functionality via table-like format, while graphical display shall provide query functionality through mouse click on the interested subject and/or mouse movement into the interested subject on the display.
- [NIM0013] PAM application shall be able to support up to 1000 NE nodes in the network.
- [NIM0014] PAM application shall have the capability to back up all its online inventory data to some removable storage media, and restore its online inventory data from backup media.
- [NIM0015] All access in PAM application shall be under some appropriate security access control.
- [NIM0016] PAM application shall be able to invoke an online, context-sensitive help system via its GUI.
- [NIM0017] The PAM application shall be able to provide an export of PAM data as ASCII format file, for all or selected PAM objects by user via PAM GUI.
- [NIM0018] PAM application shall be able to support navigation toward and from other NML applications.

3.2 NE information retrieval

- [NIM0019] Inventory shall be updated whenever an NE is installed.

This requirement implies that an NE creation notification should be issued to inventory management system from the EMS in which an NE is installed (the first time the NE starts up).

- [NIM0020] The user shall be able to retrieve the following information for an NE:

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- NE manufacturer name
- NE user label
- NE identifier
- NE Type
- Geographical location

[NIM0021] The user shall be able to retrieve the time and date the NE was initialized.

[NIM0022] The user shall be able to retrieve the following up-to-date information for an NE:

- A list of installed shelf IDs and occupied slot IDs
- A list of unoccupied slot IDs

[NIM0023] The user shall be able to retrieve NE information by the following fields individually or in combination using boolean operations:

- NE vendor name
- NE user label
- NE identifier
- NE Type
- Geographical location
- For the entire network
- Those NEs with empty slots
- Time and date the NE was registered.

[NIM0024] The user shall be able to determine the number of each type of NE by:

- EMS
- Geographical location
- Entire network

[NIM0025] The user shall be able to retrieve a report of revision levels of an installed NE, if NE provides such version history information of the revision levels. (Revision level here refers to the version level of the hardware/firmware.)

[NIM0026] After an NE has been installed, the user shall be able to retrieve the time and date of the NE installation and current operational state.

[NIM0027] The user shall be able to determine how much capacity, in theory, can be added to an NE.

It is assumed here that the capacity to be added only depends on the number of idle slots of each board type.

3.3 Board Information retrieval

[NIM0028] Inventory shall be updated whenever any board is inserted or removed.

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This requirement implies that a board creation/deletion notification should be issued to network inventory management originally from the EMS in which any board in any NE is inserted or removed after the NE starts up.

Please notice that any attribute value change notification on slot (equipmentHolder) in any EMS should also be sent to network inventory manager, since when a board is removed from its slot (before deletion of the circuit pack object) or inserted into a pre-provisioned slot there will be an attribute value change notification on the slot but not board deletion/creation notification.

[NIM0029] The user shall be able to retrieve the following information about a board:

- Board identifier
- CLEI code (if it is available)
- Circuit pack type
- Part number
- Serial number
- Asset state
- Capacity (e.g. number of ports, if the board is a line board)
- Version
- Vendor Name
- Unit Price
- Purchase Date
- Location

[NIM0030] After a board has been installed, the user shall be able to retrieve the time and date of the board installation, current operational state, administrative state, and availability status.

[NIM0031] The user shall be able to retrieve board protection information for installed boards.

[NIM0032] The user shall be able to configure the ports of an online board if its ports are configurable.

[NIM0033] The user shall be able to retrieve board information by the following fields individually or in combination using boolean operators:

- Board identifier
- Circuit pack type
- CLEI code
- Part number
- Serial number
- Version

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- Asset State

[NIM0034] The user shall be able to retrieve the number of each circuit pack type of board by:

- NE
- EMS
- Geographical location
- Entire network

[NIM0035] The user shall be able to retrieve a report containing the revision levels of a board, if such information is accessible for the board from EMS/NE.

[NIM0036] The user shall be able to determine the oldest revision level of a board type by NE.

[NIM0037] The user shall be able to determine the physical location of all boards of a specified version and/or revision level.

[NIM0038] The user shall be able to retrieve tabulating work and repair statistics of the boards on per circuit pack type basis.

[NIM0039] The user shall be able to retrieve tabulating work and repair statistics of the boards on vendor/unit price basis.

3.4 Equipment holder information retrieval

[NIM0040] Inventory shall be updated whenever a bay or shelf is installed.

[NIM0041] The user shall be able to retrieve the following information about bays and shelves:

- Holder identifier (available if online)
- Holder type
- Part number
- Serial number
- Location
- Asset state
- Unit price
- Purchase date

[NIM0042] The user shall be able to retrieve the following information about slots:

- Holder identifier
- Holder status
- Acceptable circuit pack type(s)
- Location

ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS		
ALCATEL USA			3AL 55650 1042 DTZZA		.20

[NIM0043] The user shall be able to determine which unpopulated board slots are not active and not able to receive a board due to the presence of other boards in the system. (future release)

[NIM0044] The user shall be able to retrieve board information by the following information about bays and shelves:

- Holder identifier (available if online)
- Holder status
- Acceptable circuit pack type list
- Asset state
- Location

3.5 Software information retrieval

[NIM0045] The user shall be able to retrieve the following information about software associated with an NE:

- User Label
- Operational state
- Version

3.6 Inventory management performance

[NIM0046] An inventory of each NE shall be retrievable from the NE within 30 seconds per NE of the request and stored in MIB of EML.

4 Analysis model for PAM

In the following, the functional architecture of the system is described. Then, the analysis in form of object model and dynamic model will be provided. The object model defines the static object data model for each equipment item and its management. The dynamic model describes the most important interactions between the objects themselves and between the objects and external systems.

4.1 functional architecture

The functional architecture for PAM (shown in Figure 4) is mainly composed of a Physical Asset Server and GUI clients for Physical Asset administration and configuration. User can view, edit and configure equipment resource via Physical Asset GUI. An API is offered for GUI clients to access the physical asset information and configure the limited equipment features at the server, and to notify the server any updates on physical asset data that are caused by offline operations on equipment.

ED	OI	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	21

From the equipment resource administration aspect, physical asset inventory management shall not only monitor the installed online equipment inventory items but also manage the not-installed offline equipment inventory items such as equipment items in stock and in repair.

The offline physical asset inventory database (shown in Figure 4) is not only logically separated from online persistent database, but in most cases also physically separated from the online persistent database. The object data model of offline database only contains bay, shelf, and board (circuit pack), and there is no any containment relationship between the offline objects. Therefore relational database model can characterize and organize offline objects very straightforward and efficiently. Many customers either already have their own offline inventory database (as a part of their integral corporate data warehouse) or want to have their own choice on offline database product. Since beyond physical asset manager the other generic network management components (such as topology manager and connection manager, circuit manager) have nothing to do with offline inventory, therefore offline inventory database would be better interfaced to the entire network management system through physical asset manager instead of through network resource inventory manager.

The physical asset manager, in this way, shall maintain the information consistency between the online inventory database and the offline inventory database and therefore be responsible for the informational binding between online inventory and offline inventory whenever installation and removal of any inventory items are performed.

Physical asset manager is also responsible for some of online equipment resource provisioning (such as port configuration of circuit pack).

[NIM0047] The upstream interface of Network (Online) Resource Inventory Server shall be ODMG 2.0 standard based.

[NIM0048] The downstream EML/NML interface of Network (Online) Resource Inventory Server shall be Q3 (INS-IM) for current release (AOM in future).

[NIM0049] Network (Online) Resource Inventory Server shall be responsible for online inventory data discovery from and re-synchronization with NEs/EMSs in the network.

[NIM0050] Network (Online) Resource Inventory Server shall be able to provide notification registration and delivery mechanism to PAM application so that PAM can receive update notifications from Network (Online) Resource Inventory store when registered.

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ALCATEL USA			3AL 55650 1042 DTZZA	. 22

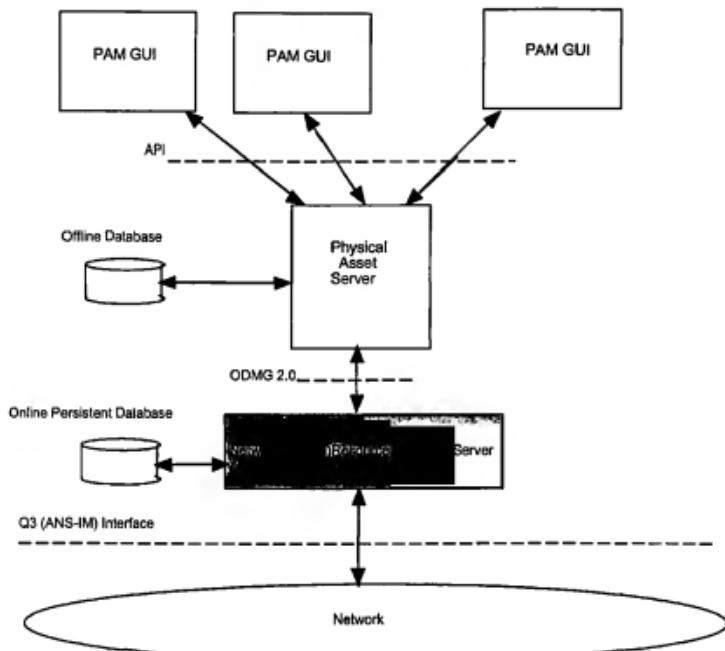


FIGURE 4: Functional Architecture

4.2 Object model

4.2.1 Board

An instance of Board class represents any kind of circuit pack which can be physically plugged into/pull off from its slot.

Board has attributes which are defined as follows:

- ID: the value of this attribute uniquely identifies an instance of this class.

ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	23

- Version: this attribute identifies the version number of this class.
- Vendor Name: this attribute indicates the vendor name.
- Unit Price: this attribute indicates the unit price of this product.
- Purchase Date: this attribute indicates when this product item was purchased.
- Serial Number: the value of this attribute uniquely identifies an instance within this product category.
- Automatic Number: this attribute is used to identify an instance within this product category if a system-readable serial number is not available. Therefore this attribute is a substitute for serial number and is automatically generated by system when the board is installed.
- Part Number: this attribute identifies product category.
- User Label: the attribute is used to identify the name of this product type.
- Circuit Pack Type: this attribute identifies the circuit pack type (e.g. CLEI code).
- Operational State: an indication of the operational state of the Board. Operational Status is a read-only attribute. The set of its permitted value is {enabled, disabled}.
- Administrative State: an indication of whether or not the board is locked or unlocked. The set of permitted value is {locked, unlocked}.
- Availability Status: this attribute indicates the current availability status of this board instance. The set of permitted values is {empty, in test, failed, offline, not installed}.

Protection: the read-only attribute identifies whether a protection scheme is associated with this circuit pack, and what role (protecting or protected) in the protection system. The set of permitted values is {null, protecting, protected}. Value null indicates no protection is used.

- Resource Pointer: the read-only attribute identifies the resource circuit pack object which is protecting this instance or protected by this instance within the protection group.
- Protection Status: the read-only attribute indicates the status of the protection switch of this instance.
- Location: this attribute indicates the geographical location name.
- Capacity: this attribute is used only for line board and conveys the information of port signal rate list of this board.

Asset State: this attribute indicates whether this instance is an online inventory item or offline inventory item.

ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	.24

Installed Time: records the time at which this item is currently installed online.

Removal Time: records the time at which this item is de-installed. When the item remains installed, the value of this attribute shall be Null.

- Worked Time: indicates the accumulate time this item has correctly worked.

Repaired Times: indicates the total times this item has been repaired so far.

The following operation(s) are supported by the Board object class:

- Query: this operation is used to get information concerning the attributes of a board.
- Edit: this operation is used to edit those attributes not relevant to the operational features of a board.
- Provisioning: this operation is used to configure any configurable attributes of a board.
- Alarms: this operation is used to access current outstanding alarm information associated with a board.
- Protection: this operation is used to access protection information of a board and its protection group. If no equipment protection is availablemodeled for the board, the return value shall be Null.

Notes:

- Part number is a category identifier and *unique* number inside Alcatel for each type of Alcatel products. Alcatel's customers use the part number to uniquely identify and order Alcatel's product. Serial number is a product item identifier and is unique within a specific type of product (i.e., product instance).
- When the value of Protection attribute is null, which means this instance is not associated with a protection system, the attributes Protection Status and Resource Pointer are not used.
- The relationship between the Asset State and the Availability Status is described below.

Asset State	Availability Status
installed	(empty)
installed	inTest
installed	failed
installed	offLine
in stock	not-installed
in repair	not-installed

ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	25

removed	not-installed
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That is, Availability Status provides more detailed information for installed board, while Asset State provides more detailed information for not-installed board. More sub-definitions of Availability Status and Asset State could be supported when needed.

4.2.2 Equipment Holder

An instance of Equipment Holder class represents either a bay or a shelf.

Equipment Holder has attributes which are defined as follows:

- ID: the value of this attribute uniquely identifies an instance of this class.
- Vendor Name: this attribute indicates the vendor name.
- Unit Price: this attribute indicates the unit price of this product.
- Purchase Date: this attribute indicates when this product item was purchased.
- Holder Type: this attribute indicates the type (bay or shelf) of this instance.
- Configuration Type
- Serial Number: the value of this attribute uniquely identifies an instance within this product category.
- Automatic Number: this attribute is used to identify an instance within this product category if a system-readable serial number is not available. Therefore this attribute is a substitute for serial number and is automatically generated by system when the board is installed.
- Part Number: this attribute identifies product category.
- Location: this attribute indicates the geographical location name.
- Asset State: this attribute indicates whether this instance represents an online inventory item or offline inventory item.

The following operation(s) are supported by this object class:

- Query: this operation is used to get information concerning the attributes of an equipment holder.
- Edit: this operation is used to edit those attributes not relevant to the operational features of an equipment holder.

4.2.3 Slot

An instance of Slot class represents a slot. Instances of this class are only applicable to online inventory management.

ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS		
ALCATEL USA			3AL 55650 1042 DTZZA		· 26

Slot has attributes which are defined as follows:

- ID: the value of this attribute uniquely identifies an instance of this class.
- Holder Status: the read-only attribute indicates whether the slot is empty or occupied. The set of permitted values is {empty, in aCPL, not in aCPL, unknown}.
- Acceptable Circuit Pack Type List: the read-only attribute identifies the types of circuit packs that can be supported by the slot.
- Location: this attribute indicates the geographical location name.

The following operation(s) are supported by the this object class:

- Query: this operation is used to get information concerning the attributes of a slot.

4.2.4 Network Element

An instance of this class represents a NE.

Network Element has attributes which are defined as follows:

- ID: the value of this attribute uniquely identifies an instance of this class.
- Vendor Name: this attribute indicates the vendor name.
- User Label: the attribute is used to represent a label of this product type named by user.
- Operational State: an indication of the operational state of the NE. Operational Status is a read-only attribute. The set of its permitted value is {enabled, disabled}.
- Communication Link State: This read-only attribute identifies whether or not the communication link to EMS is capable of performing its normal functions.
- Location: this attribute indicates the geographical location name.

The following operation(s) are supported by the this object class:

- Query: this operation is used to get information concerning the attributes of an NE.
- Edit: this operation is used to edit those attributes not relevant to the operational features of an NE.

4.2.5 Software

An instance of this class represents a software package.

Network Element has attributes which are defined as follows:

ED	01	MS WORD	1320 NM Network Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	27

- ID: the value of this attribute uniquely identifies an instance of this class.
- Version: this attribute identifies the version number of this instance.
- Vendor Name: this attribute indicates the vendor name.
- User Label: the attribute is used to represent a label of this product type named by user.
- Operational State: an indication of the operational state of the NE. Operational Status is a read-only attribute. The set of its permitted value is {enabled, disabled}.

The following operation(s) are supported by the this object class:

- Query: this operation is used to get information concerning the attributes of software.
- Edit: this operation is used to edit those attributes not relevant to the operational features of software.
- Download: this operation is used to download the software to NE.

4.2.6 EMS

An instance of this class represents an EMS.

EMS has attributes which are defined as follows:

- ID: the value of this attribute uniquely identifies an instance of this class.
- Vendor Name: this attribute indicates the vendor name.
- Location: this attribute indicates the geographical location name.

The following operation(s) are supported by the this object class:

- Query: this operation is used to get information concerning the attributes of EMS.
- Edit: this operation is used to edit those attributes not relevant to the operational features of EMS.

4.2.7 Equipment Protection Group

An instance of this class represents an EPG.

An EPG is used to manage a protection system and identifies the protected (i.e., working or regular) equipment(s) and protecting (i.e., backup or standby) equipment(s) in this protection system.

EPG has attributes which are defined as follows:

ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA 1320 NM R2.0	- 28

- ID: the value of this attribute uniquely identifies an instance of this class in the NE.
- Operational State: the read-only attribute identifies whether or not the protection mechanism represented by this object is capable of working.
- Protection Group Type: the attribute indicates whether the protection scheme used is 1+1 or M:N. For equipment protection, the protection scheme is typically either 1:N or 1+1.

Revertive: the read-only attribute identifies whether or not the protection scheme used is revertive. The default value for this attribute shall indicate revertive operation.

The following operation(s) are supported by the this object class:

- Query: this operation is used to get information concerning the attributes of EMS.

4.2.8 Support Object -- Spare Parts

A support PAM data object, named as Spare parts, will be defined in this section. The key difference between this this support PAM object and the other PAM objects defined above is that it is used for overall spare part (or repairing part) management of physical assets rather than individual item, and hence there shall be no any corresponding Q3 object for it.

Spare parts has the following attributes:

- Part Type: indicates the type of this spare parts. The set of available values is {board, bay, shelf}.
- Part Number
- User Label
- Asset State
- Quantity: indicates the total number of spare parts in stock (Asset State = stock) or faulty parts in repair (Asset State = repair).
- Underflow Threshold: indicates the lower threshold for alert.
- Overflow Threshold: indicates the upper threshold for alert.
- Location
- Version
- Vendor Name

The following operation(s) are supported for spare parts:

- Query: this operation is used to get information concerning the attributes of spare parts.
- Edit: this operation is used to edit those attributes not relevant to the operational features of EMS.

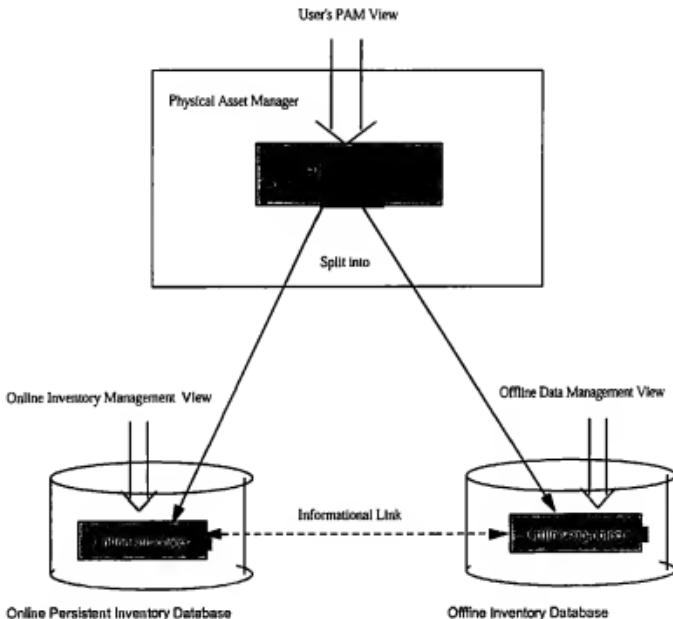
ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	29

The following following special behaviors are supported:

- A threshold alarm will be reported whenever the quantity reaches either the underflow threshold or the overflow threshold.
- A threshold alarm clear will be reported whenever underflow threshold < the quantity < overflow threshold.

4.3 PAM Object Decomposition

As we can observe above, an object of board or equipment holder class in PAM view has some "offline" attributes (such as Unit Price, Purchase Date, and so on) which are not relevant to its online operational behaviors. It is also clear that a data model of offline inventory database will not have any "online" attributes of its corresponding PAM view object. Thus, the board and equipment holder object in PAM view shall be further split into sub-objects, as illustrated in the following Figure 5.



ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	· 30

FIGURE 5: Illustration of Decomposition of PAM View Object

[NIM0051] Board object of PAM view defined above shall be split into online sub-object and offline sub-object, corresponding to online board data model and offline board data model respectively.

[NIM0052] Equipment Holder object of PAM view defined above shall be split into online subject and offline sub-object, corresponding to online equipment holder data model and offline equipment holder data model respectively.

[NIM0053] The online data model is supported via the online persistent OODB, while the offline data model is supported via the offline relational DB.

[NIM0054] The support PAM object model (spare boards and spare equipment holders) shall be supported via the online persistent OODB.

[NIM0055] The integrity of the board and equipment holder object in PAM view shall be provided and maintained via physical asset manager.

[NIM0056] The link for informational binding of the two sub-objects from online data model and offline data model is the combination of PN and SN.

In general, data duplication between split online sub-object and offline sub-object of a PAM view object shall be avoided as much as possible, in order to promote better data consistency and database storage efficiency.

[NIM0057] If there exist any inconsistent duplicated data attributes between split online sub-object and offline sub-object of a PAM view object, they shall be aligned according to the online sub-object attributes.

In the following, online sub-object data model and offline sub-object data model for PAM board and equipment holder object model are described.

4.3.1 Online Sub-Object Board

Online sub-object board has the following attributes:

- ID
- Serial Number
- Part Number
- Automatic Number
- Circuit Pack Type
- Operational State
- Administrative State
- Availability Status

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ALCATEL USA			3AL 55650 1042 DTZZA	31

- Location: this attribute indicates the geographical location name.
- Version
- User Label
- Capacity
- Installed Time
- Removal Time

The following operation(s) are supported for the online sub-object board:

- Provisioning: this operation is used to configure any configurable attributes of a board.
- Alarms: this operation is used to access current outstanding alarm information associated with a board.
- Protection: this operation is used to access protection information of a board. If no equipment protection is available-modeled for the board, the return value shall be Null.

4.3.2 Offline Sub-Object Board

Offline sub-object board has the following attributes:

- Version
- Vendor Name
- Unit Price
- Purchase Date
- Serial Number
- Part Number
- Automatic Number: this attribute is used to identify an instance within this product category if a system-readable serial number is not available. Therefore this attribute is a substitute for serial number and is automatically generated by system when the board is installed.
- User Label
- Asset State
- Worked Time
- Repaired Times

The following operation(s) are supported for the offline sub-object board:

- Query
- Edit

ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	.32

4.3.3 Online Sub-Object Equipment Holder

Online sub-object equipment holder has the following attributes:

- ID
- Serial Number
- Part Number
- Automatic Number
- Location: this attribute indicates the geographical location name for online site.
- Holder Type
- Configuration Type
- Asset State
- Installed Time
- Removal Time

The following operation(s) are supported for the online sub-object board:

- Query: this operation is used to get information concerning the attributes of an online equipment holder.

4.3.4 Offline Sub-Object Equipment Holder

Offline sub-object board has the following attributes:

- Vendor Name
- Unit Price
- Purchase Date
- Serial Number
- Part Number
- Automatic Number: this attribute is used to identify an instance within this product category if a system-readable serial number is not available. Therefore this attribute is a substitute for serial number and is automatically generated by system when the board is installed.
- Holder Type
Location: this attribute indicates the store location in warehouse.
- Asset State
- Worked Time
- Repaired Times

The following operation(s) are supported for the offline sub-object board:

- Query

ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	33

- Edit

4.4 Dynamic model

The dynamic model shows the time-dependent behavior of the system and the objects in it. The dynamic model is expressed in interaction diagrams for operation requests, and state transition diagrams.

The interaction diagrams show the behavior of the system in terms of sequences of interactions among architectural components. The scenarios are useful for understanding how objects work together to perform a task.

The state transition diagram shows the lifecycle of physical inventory items in system and how these items are transited from one state to another.

In general, each inventory item in PAM will be in one of the two basic states – installed (online) and not-installed (offline) (see Figure 6). The broad meaning of physical inventory management is to manage both online and offline items while the narrow meaning of physical inventory management is only to manage online items. In this document, the broad meaning of physical inventory management is considered.

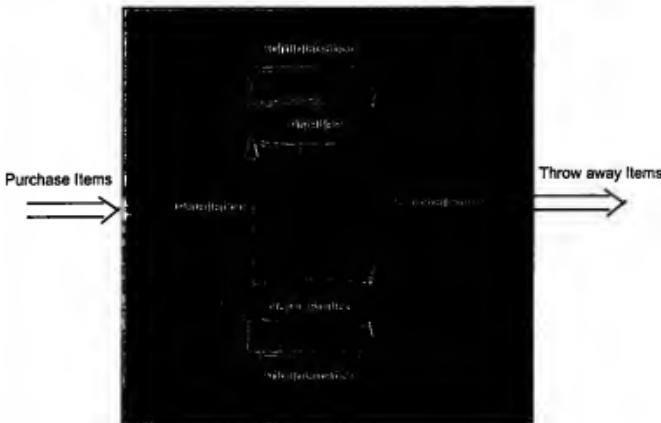


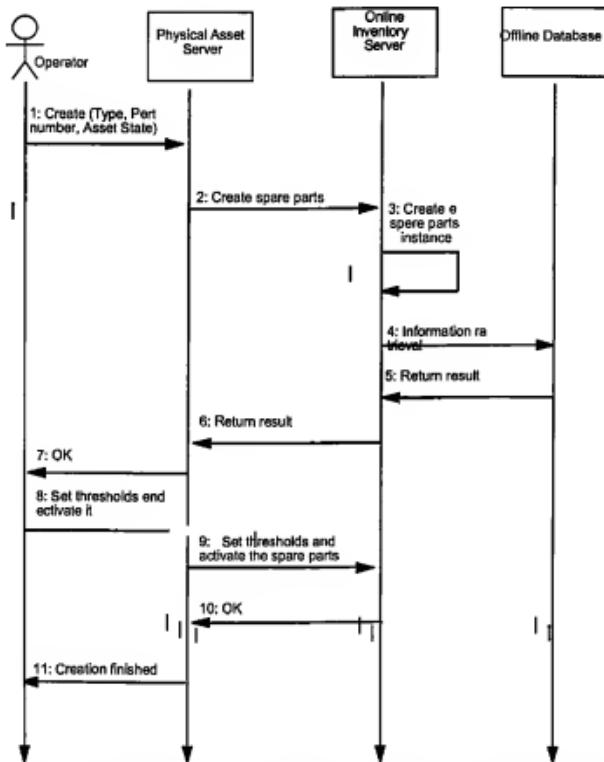
FIGURE 6: Global View of State Diagram for Physical Inventory Items

ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS		
ALCATEL USA			3AL 55650 1042 DTZZA	R2.0	34

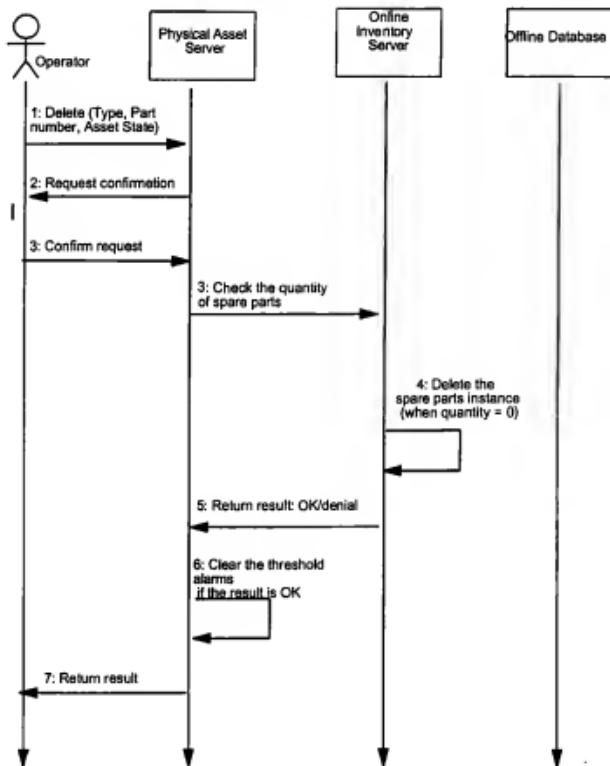
The not-installed state is composed of a set of sub-states, such as *in stock* (*warehouse*), *in repair*, and *removed*. A physical inventory item is in not-installed state if this item is in one sub-state of the set {*in stock*, *in repair*, *removed*}.

4.4.1 Creation and Deletion of Spare Parts

1. Spare Parts Creation



2. Spare Parts Deletion



ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	.36

4.4.2 Informational Binding between Online and Offline Inventory Sub-Objects

When an equipment item is installed for the first time, the online sub-object will be created in online core inventory store. The online sub-object will not be deleted from online inventory store even when the equipment item is de-installed. When an equipment item is added to warehouse for the first time, the offline sub-object will be first created in the offline database. Since a PAM view managed object is split into online and offline sub-objects as illustrated in Figure 5, informational binding between these two sub-objects shall be essential, in order to pack the online sub-object and offline sub-object together to provide an integral view of PAM object, and to track equipment items in transition to maintain their inventory data consistency in PAM system. Three different situations for the information binding are identified and will be discussed in the following sections separately.

- 1) All equipment items have system-readable part number and serial number
- 2) All equipment items have human-readable or/and barcode-readable part number and serial number, but not all of them have system-readable part number and serial number.
- 3) All equipment items have human-readable and barcode-readable part number and serial number. Although some equipment items do not have system-readable serial number, each NE provides a barcode reader interface.

4.4.3 Informational Binding -- Case 1

In this section, we consider the informational binding for the first situation listed above. In this situation, informational binding is performed based on the combination of part number and serial number of the inventory item. The following three scenarios are described.

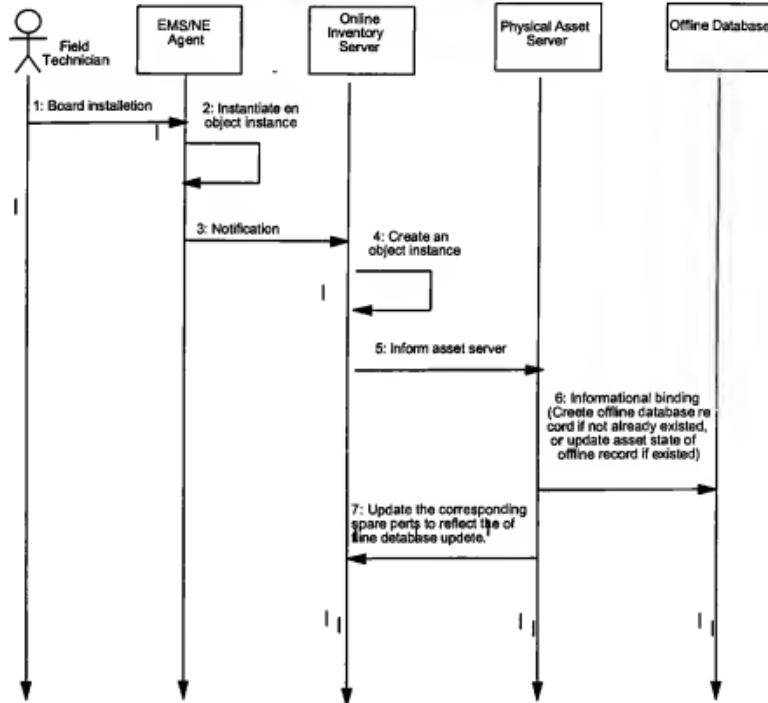
1. Install equipment item

When an equipment item is installed, the following major steps shall be carried out:

- (i) An online managed object instance of circuit pack class is automatically instantiated by the EMS (or NE) agent.
- (ii) Then the online inventory resource manager will be notified via Q3 interface, and an identical circuit pack object instance will also be created in NML system-wide, unified online inventory store.
- (iii) Physical asset manager will accurately identify this specific board in transition, and bind its former offline inventory sub-object with its newly created online inventory sub-object based on the system-wide unique combination of its part number and serial number, in order to maintain the global inventory data consistency.

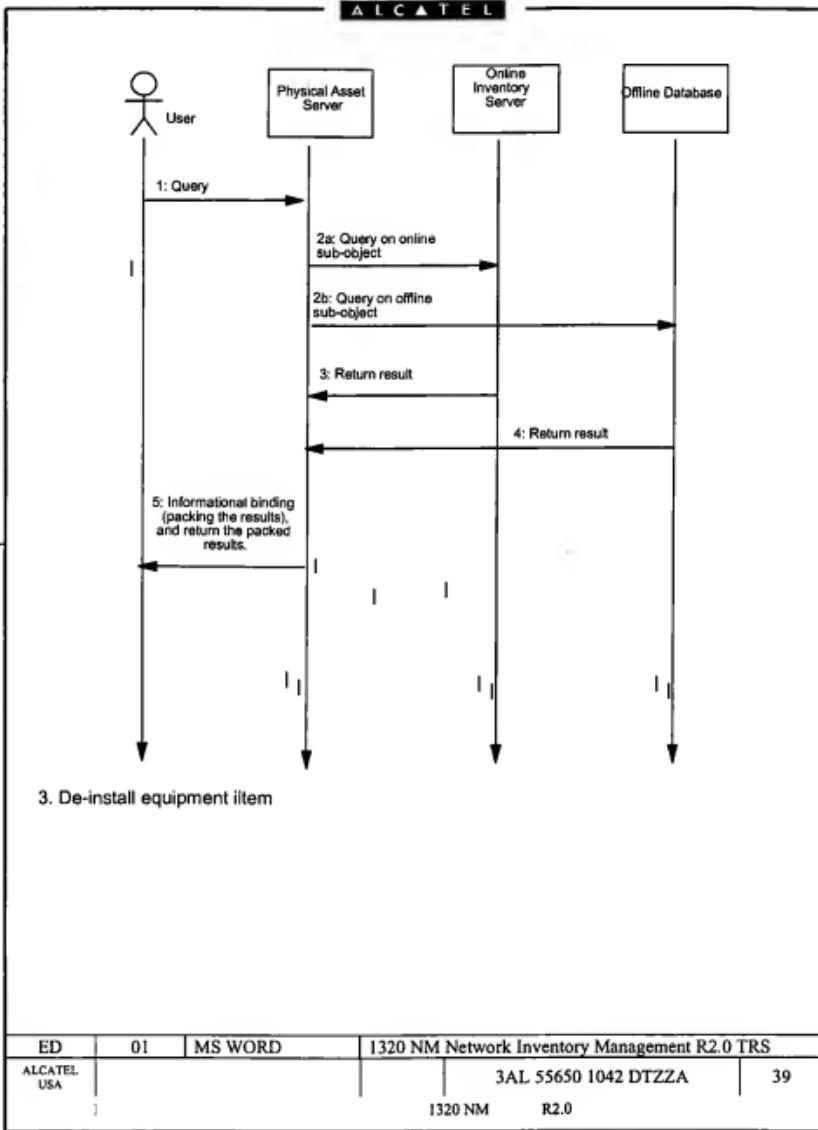
The following interaction diagram illustrate the scenario described above.

ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	37

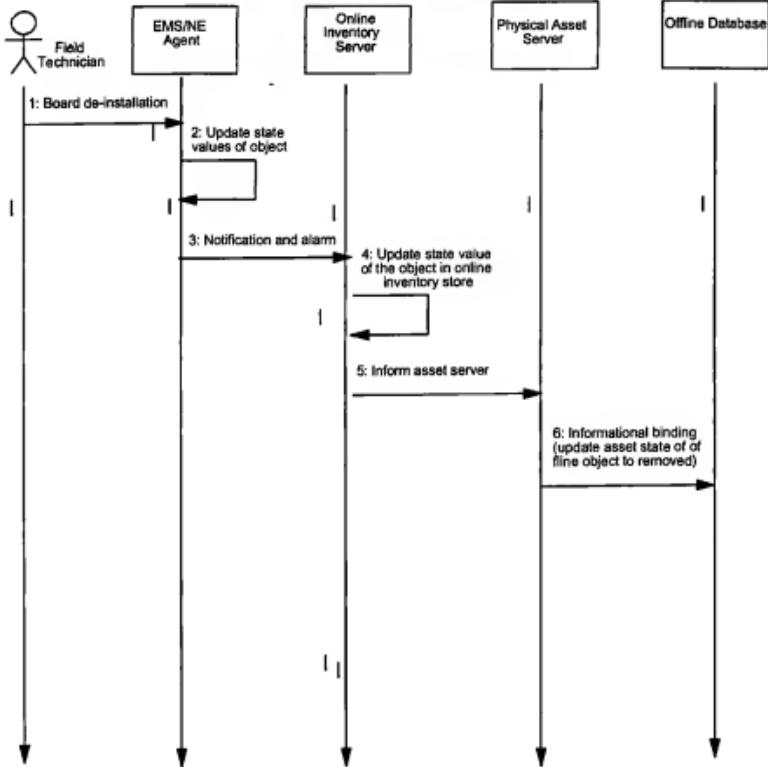


2. Query on equipment item

ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	-38



ED	OI	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	39



ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	40

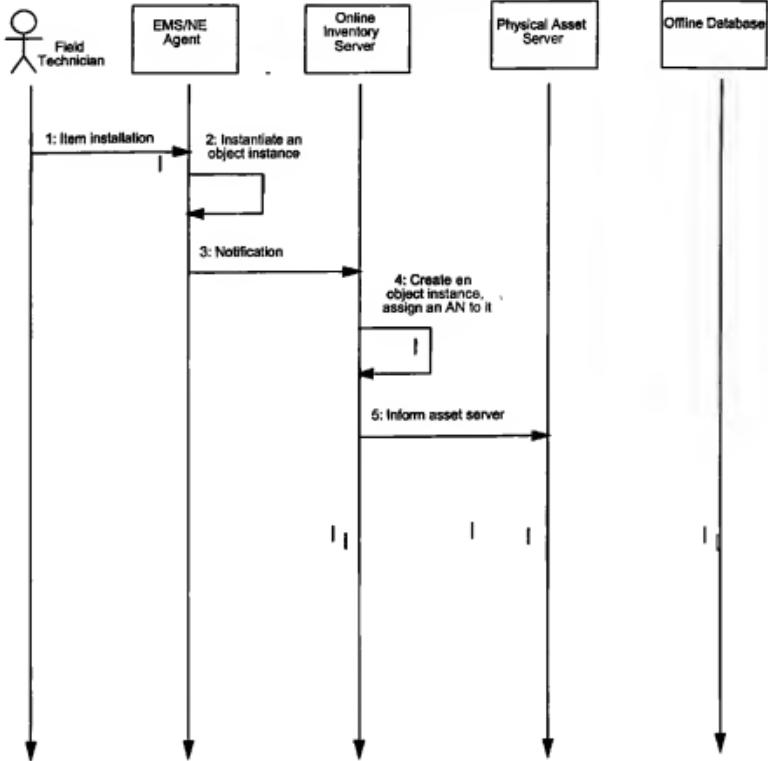
4.4.4 Informational Binding – Case 2

In this section, we consider the second situation listed above.

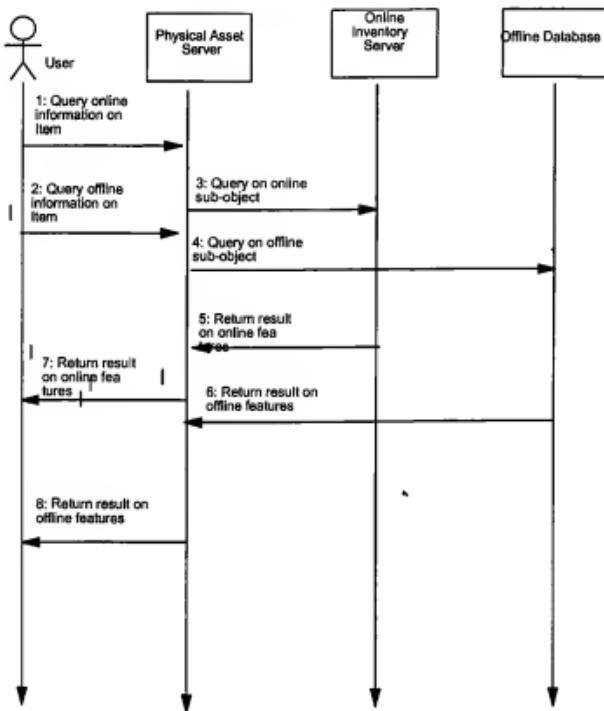
A system-wide unique automatic number is automatically generated and assigned to its online inventory sub-object by physical asset manager when any equipment item without system-readable part number or serial number is installed. Since AN is only associated with the online sub-object, there is no any informational link between the online sub-object and offline sub-object. As a result, informational binding would not be possible in this situation. Neither the online inventory sub-object nor offline inventory sub-object of an equipment item could, in general, identify the other part of the PAM view object. AN is used here for the purpose of keeping track of only online inventory sub-objects.

1. Install equipment item

ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	41

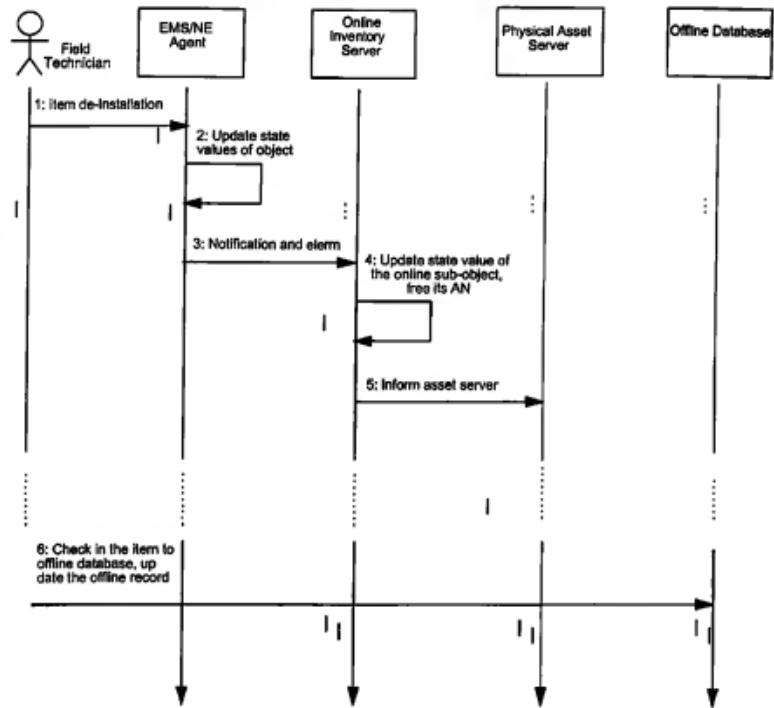


2. Query on equipment item



3. De-install equipment item

ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	43



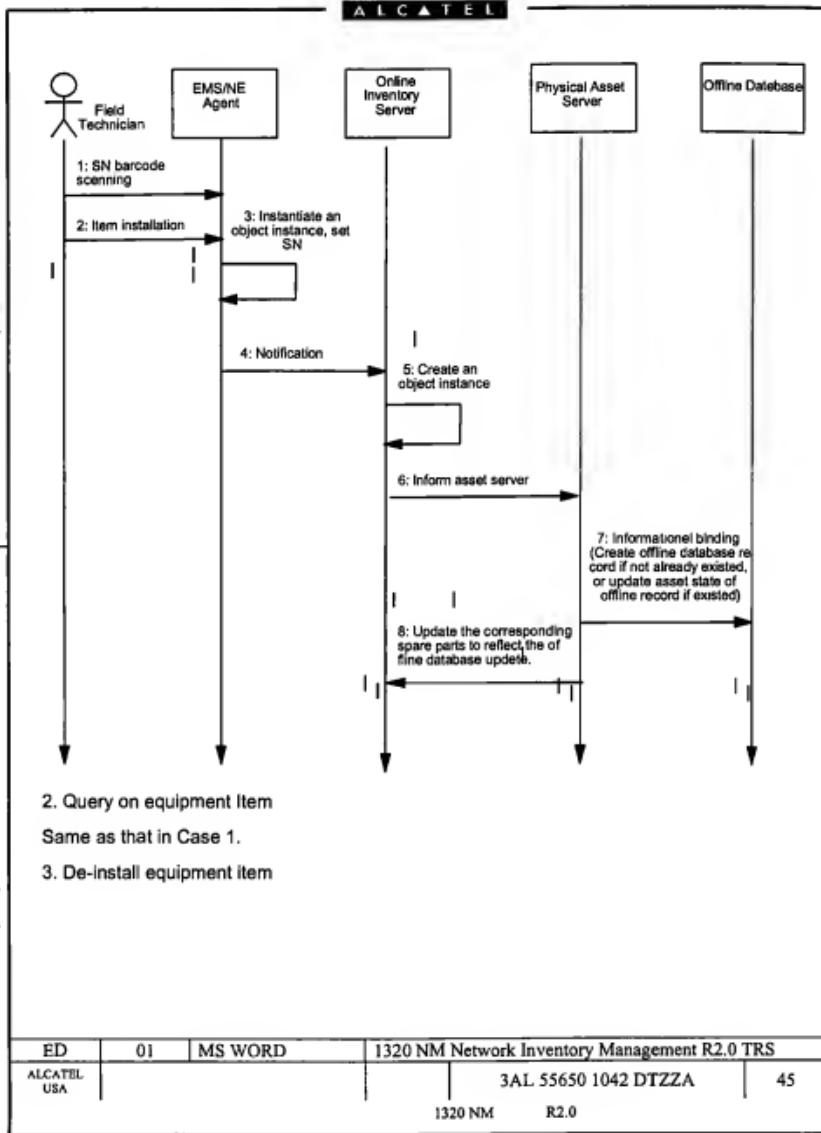
4.4.5 Informational Binding -- Case 3

In this section, we consider the third situation listed above. The difference between this situation and the second situation discussed above is that a barcode reader interface is provided for each NE for the use of reading serial number of each equipment item at installation on site. Thus, this barcode reading for equipment item on installation site is intended to be a substitute of system-readable barcode in order to mimic the first situation discussed in Case 1. Therefore, the scenarios of installation and de-installation are very similar to those of Case1 and the query scenario in this situation is the same as that in Case 1.

1. Install equipment item

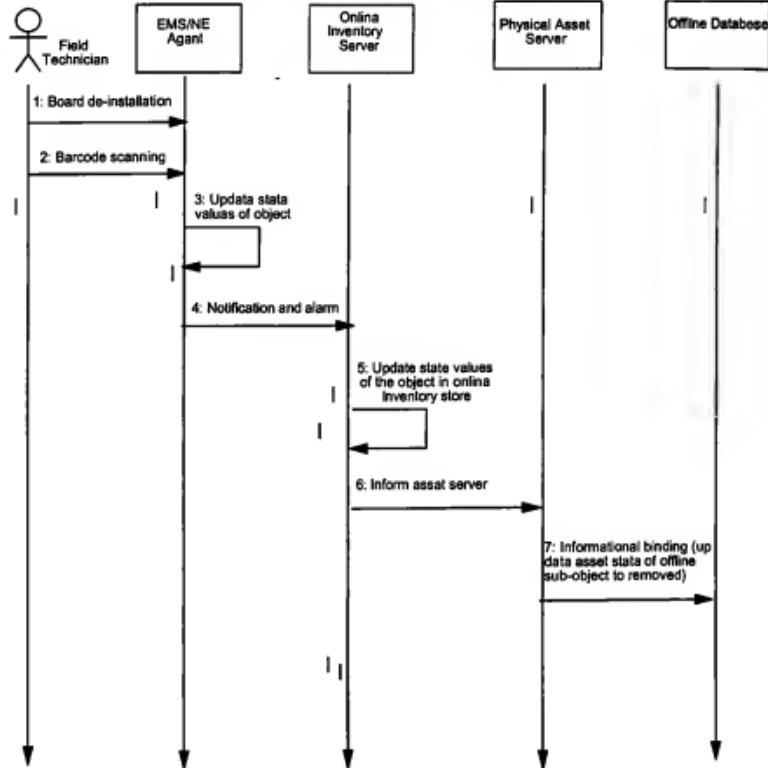
ED	OI	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	.44

1320 NM R2.0



ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	45

1320 NM R2.0



ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS		
ALCATEL USA			3AL 55650 1042 DTZZA		.46

4.4.6 State Diagram for Inventory Items with System-Readable PN/SN

The following state diagram expands the general state diagram shown in Figure 5 for those physical inventory items with system-readable PN/SN.

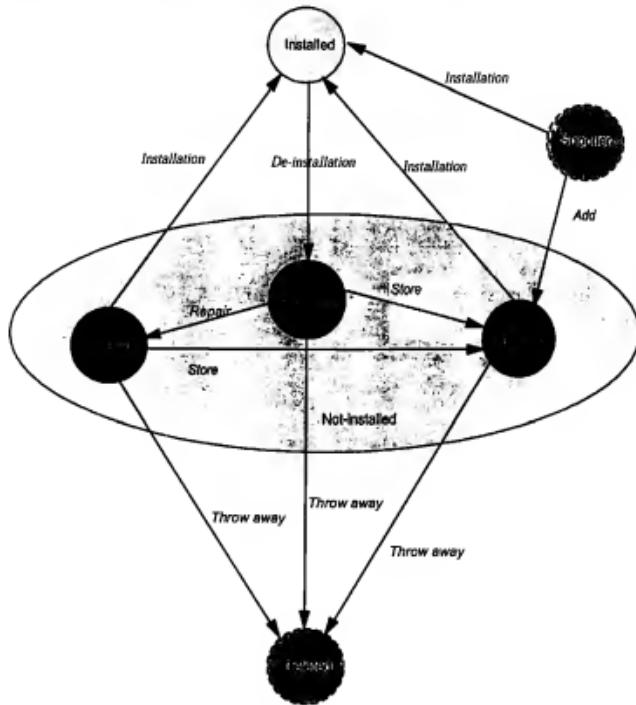


FIGURE 7: State Diagram (with PN/SN)

4.4.7 State Diagram for Inventory Items without PN/SN

The following state diagram expands the general state diagram shown in Figure 5 for those physical inventory items without system-readable PN/SN.

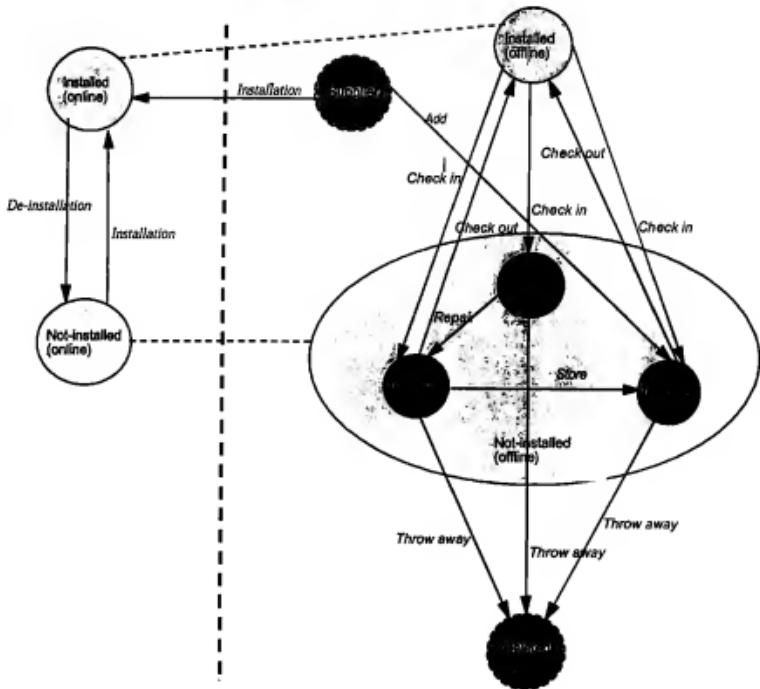


FIGURE 8: State Diagram (without PN/SN)

In the Figure 8, since there is no informational link between the online sub-object and offline sub-object, the online inventory sub-object view and the offline inventory sub-object view could not be integrated into a unified PAM object view and will be present in PAM individual.

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ALCATEL USA			3AL 55650 1042 DTZZA	.48

5 Information model for EML/NML Q3 Interface

The downstream Q3 (ANS-IM) interface between the network inventory resource manager and the network (shown in Figure 4) will be specified in this section. The mapping from online inventory objects described in Section 3 to Q3 managed objects will be given. Then the containment relationship of Q3 objects is presented, followed by the detailed description of each Q3 managed object and its MOCS (Managed Object Conformance Statements).

The following common notations will be used in the MOCS.

(1) Notations used for the status value column:

- m mandatory
- o optional
- c conditional
- x prohibited
- - not applicable or out of scope

(2) Notations used for the support answer column:

- Y implemented
- N not implemented
- - no answer required
- Ig the item is ignored (i.e. processed syntactically but not semantically)

5.1 Map PAM Objects to Q3 objects

The list of Q3 managed objects to be supported in the Q3 interface is listed below. The mapping from PAM objects described in Section 3 to Q3 managed objects is given.

PAM Object	Q3 Object(s)
Board	circuitPackATT/Line + equipmentProtectionUnit
Equipment Holder	equipmentHolder (bay/shelf)
Slot	equipmentHolder (slot)
Network Element	managedElementR1 + managementLink
Software	softwareR1
EMS	ems
Equipment Protection Group	equipmentProtectionGroup

Table 1.

[NIM0058] The PAM view object shall be (partially) mapped to corresponding Q3 object or the combination of Q3 objects shown above by Physical Asset Server and hence the mapping is transparent to PAM user.

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ALCATEL USA			3AL 55650 1042 DTZZA	49

5.1.1 Mapping of Board to circuitPackATT/Line

Board	circuitPackATT/Line
ID	equipmentId
Serial Number	serialNumber
Part Number	serialNumber
Automatic Number	serialNumber
Circuit Pack Type	circuitPackType
Version	version
Vendor Name	vendorName
Operational State	operationalState
Administrative State	administrativeState
Availability Status	availabilityStatus
Asset State	-
Protection	-
Resource Pointer	-
Protection Status	-
Location	locationName
Capacity	portmappingList
User Label	userLabel
Installed Time	-
Removal Time	-
Worked Time	-
Repaired Times	-
Unit Price	-
Purchase Date	-

Table 2a.

Board	equipmentProtectionUnit
ID	protectionUnitId
Serial Number	-
Part Number	-
Automatic Number	-

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ALCATEL USA			3AL 55650 1042 DTZZA	50

Circuit Pack Type	-
Operational State	-
Administrative State	-
Availability Status	-
Asset State	-
Protection	protecting
Resource Pointer	unreliableResourcePointer
Protection Status	equipmentProtectionStatus
Version	-
Vendor Name	-
Location	-
Capacity	-
User Label	-
Installed Time	-
Removal Time	-
Worked Time	-
Repaired Times	-
Unit Price	-
Purchase Date	-

Table 2b.

5.1.2 Mapping of Equipment Holder

Equipment Holder	equipmentHolder
ID	equipmentId
Serial Number	serialNumber
Part Number	serialNumber
Automatic Number	serialNumber
Holder Type	holderType
Configuration Type	holderType
Holder Status	holderStatus
Vendor Name	vendorName
Asset State	-

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Location	locationName
User Label	userLabel
Installed Time	-
Removal Time	-
Worked Time	-
Repaired Times	-
Unit Price	-
Purchase Date	-

table 3.

5.1.3 Mapping of Slot

Slot	equipmentHolder
ID	equipmentId
Holder Type	holderType
Configuration Type	holderType
Acceptable Circuit Pack Type List	acceptableCircuitPackTypeList
Holder Status	holderStatus

Table 4.

5.1.4 Mapping for Network Element

Network Element	managedElementR1
ID	equipmentId
Vendor Name	vendorName
Version	version
User Label	userLabel
Operational State	operationalState
Communication Link State	-
Location	locationName
Installation Date	-

Table 5a.

Network Element	managementLink
ID	managementLinkId

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ALCATEL USA			3AL 55650 1042 DTZZA	52

Vendor Name	-
Version	-
User Label	-
Operational State	-
Communication Link State	operationalState
Location	-
Installation Date	-

Table 5b.

5.1.5 Mapping for Software

Software	softwareR1
ID	softwareId
Vendor Name	vendorName
Version	version
User Label	userLabel
Operational State	operationalState
Initialization Date	-

Table 6.

5.1.6 Mapping for EMS

EMS	ems
ID	emsId
Vendor name	vendorName
Location	locationName

Table 8.

5.1.7 Mapping for Equipment Protection Group

Equipment Protection Group	equipmentProtectionGroup
ID	protectionGroupId
Operational State	operationalState
Protection Type	protectionGroupType
Revertive	revertive
Protecting Unit	-

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ALCATEL USA		3AI 55650 1042 DTZZA	53
	1320 NM	R2.0	

Protected Unit List

Table 7.

5.2 Containment relationship

The containment relationship for Q3 managed objects is shown below.

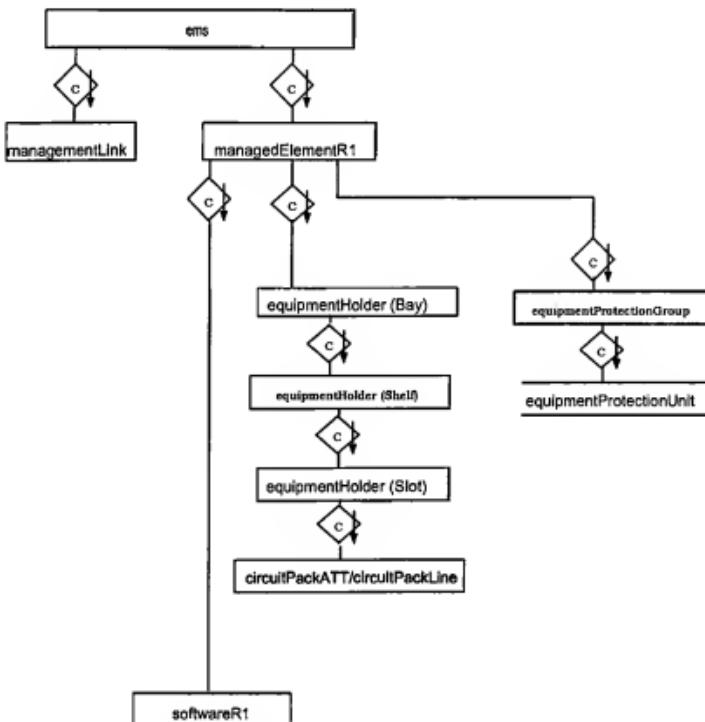


FIGURE 9: Containment relationship

ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	54

5.3 circuitpackatt

5.3.1 Instantiation Rules

The instantiation rules for circuit packs depend on the types of circuit packs. The following instantiation rules are considered here:

- An instance of circuitPackATT is automatically created by the agent when the circuit pack is inserted into the slot.
- An instance of circuitPackATT is individually deleted by the EML manager application.
- An instance of circuitPackATT is explicitly created by the EML manager application.
- An instance of circuitPackATT is automatically created by the agent when the shelf is instantiated, and the circuit pack must be present in its slot at that time.
- An instance of circuitPackATT can not be separately deleted by the EML manager application. Rather, it will be automatically deleted when the holding shelf is deleted.

Which circuit pack of the circuitPackType shall use which instantiation rule should be specified in relevant Implementation Agreement documents.

5.3.2 Naming Rules

The naming attribute of the circuitPack will always have the Integer value zero (0).

5.3.3 State Attributes

The operationalState of the circuitPack becomes 'disabled' if an alarm is issued with a 'disabling' probable cause (for example: Improper Removal, Internal Link Failure, Power Problem). The operationalState of the circuitPack is 'enabled' when there is no alarm on it.

The administrativeState is supported for read-only.

5.3.4 Special Behavior

- UserLabel: the common mnemonic of the circuitPack will be included in the userLabel.
Examples: CPU8800, PS1890, ...
- circuitPackType: the CLEI code, if available, will be used in circuitPackType. Otherwise the common mnemonic of the circuitPack will be duplicated here.
- serialNumber: will contain both serial number and part number. The format is specified as: P/N-xxxxxxxxxxxx followed by a space and

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ALCATEL USA			3AL 55650 1042 DTZFA	55

S/N-xxxxxxxxxxxxx. Or, if system-readable serial number is not available, serialNumber will contain automatic number generated by system and part number. The format is specified as: P/N-xxxxxxxxxxxxxx followed by a space and A/N-xxxxxxxxxxxxx.

5.3.5 MOCS

Managed object class support

Index	Managed object class template label	Value of object identifier for the managed object class	Support of all mandatory features (Y/N)	Is the actual class the same as the managed object class to which conformance is claimed? (Y/N)
1	circuitPackATT	0 0 13 3100 0 21 3 4	N	Y

Package support

Index	Package template label	Value of object identifier for package	Constraints and values	Status	Support	Additional information
1	circuitPackATT	P kg		m	N	
2	createDeleteNotificationPackage	0 0 13 3100 0 4 10		m	Y	
3	administrativeOpationalStatesPackage	0 0 13 3100 0 4 1		m	Y	
4	stateChangeNotificationPackage	0 0 13 3100 0 4 28		m	Y	
5	equipmentEquipmentAlarmRIPackage	0 0 13 3100 0 4 37		m	N	
6	currentProblemListPackage	0 0 13 3100 0 4 13		m	Y	
7	equipmentAlarmEffectOnServicePackage	0 0 13 3100 0 4 38		m	Y	
8	alarmSeverityAssignmentPointerPackage	0 0 13 3100 0 4 3		m	N	
9	circuitPackPackage			m	Y	
10	equipmentRIPackage			m	Y	
11	environmentalAlarmsRIPackage	0 0 13 3100 0 4 36	c	N		

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ALCATEL USA		3AL 55650 1042 DTZZA	56
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A L C ▲ T E L

12	processingErrorA	0 0 13 3100 0 4		c	y		
13	alarmRMIPackage	39		m	y		
14	equipmentNamePackag	e		m	y		
15	attributeValueChangerNonNotificationPackage	0 0 13 3100 0 4 4		o	y		
16	affectedObjectList	0 0 13 3100 0 4 2		c	y		
17	environmentalData	0 0 13 3100 0 4		c	n		
18	rmIPackage	68		c	n		
19	moCommunicationsInformationPackage	14		c	n		
20	processingErrorA	0 0 13 3100 0 4		c	n		
21	itemPricing	21		c	n		
22	userLabelInPackage	0 0 13 3100 0 4		y	n		
23	vendorNamePacka	22		c	n		
24	size	0 0 13 3100 0 4		c	y		
25	versionPackage	33		c	y		
26	locationNamePac	34		c	y		
27	name	0 0 13 3100 0 4		c	y		
28	topPackage	17		m	y		
29	packagePackage	24		c	y		
30	alarmomophicPac	29 32 4 17		c	n		

Attribute support

Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Set by create	Cat	Replace
1	administrativeState	2 9 3 2 7 31	PV: locked(0), unlocked(1)	—	m	y
2	operationalState	2 9 3 2 7 35	—	—	m	y
3	alarmStatus	0 0 13 3100	—	—	m	n
4	currentProblemLi	0 0 13 3100	—	—	m	y
5	st	0 2 17	—	—	m	—
	alarmSeverityAssessmentProfileNo	0 0 13 3100	—	—	m	m

ED	0 1	MS WORD	1320 NM Network Inventory Management R2.0 TRS	3 AL 55650 1042 DTZZA	R2.0
ALCATEL USA					

inter										
6	circuitPackType	0 0 13 3100 0 7 54	PV: 'CLEI code' if available, otherwise use userLabel	m	Y	m	Y	-		
7	availabilityStatus	2 9 3 2 7 33	PV: 'empty', inTest(0), failed(1), offLine(3), notInstalled(7)	-		m	Y	-		
8	serialNumber	0 0 13 3100 0 7 69		-		m	Y	-		
9	supportedByObjetList	0 0 13 3100 0 7 40		-		m	N	m	N	
10	affectedObjectList	0 0 13 3100 0 7 2		-		o	Y	-		
11	vendorName	0 0 13 3100 0 7 51		-		o	N	o	N	
12	version	0 0 13 3100 0 7 52		-		o	Y	o	N	
13	locationName	0 0 13 3100 0 7 27		-		o	Y	o	N	
14	equipmentId	0 0 13 3100 0 7 20	PV: 0	m	Y	m	Y	-		
15	replaceable	0 0 13 3100 0 7 34		m	N	m	N	-		
16	packages	2 9 3 2 7 66		-		o	Y	-		
17	allomorphs	2 9 3 2 7 50		-		o	N	-		
18	objectClass	2 9 3 2 7 65		-		m	Y	-		
19	nameBinding	2 9 3 2 7 63		-		m	Y	-		
20	userLabel	0 0 13 3100 0 7 50		-		o	Y	o	N	

(concluded) – Attribute support

Index	Add		Remove		Set to default		Additional information		
	Status	Support	Status	Support	Status	Support			
1	-	-	-	-			LIV: unlocked(1)		
2	-	-	-	-					
3	-	-	-	-					
4	-	-	-	-					
5	-	-	-	-					
6	-	-	-	-					
7	-	-	-	-					
8	-	-	-	-			Contains both serial and part numbers.		

						format: P/N-xxxxxx S/N-xxxxxx. Or contains automatic and part numbers, format: A/N-xxxxxx S/N-xxxxxx.
9	m	N	m	N	-	
10	-	-	-	-	-	
11	-	-	-	-	-	
12	-	-	-	-	-	
13	-	-	-	-	-	
14	-	-	-	-	-	LIV: 0
15	-	-	-	-	-	
16	-	-	-	-	-	
17	-	-	-	-	-	
18	-	-	-	-	-	
19	-	-	-	-	-	circuitPack-equipmentHolder-autoCreated-R1, circuitPack-equipmentHolder-explicitlyCreated-R1
20	-	-	-	-	-	see section SPECIAL BEHAVIOUR of circuitPackATT

Action support

Index	Action type template label	Value of object identifier for action type	Constraints and values	Status	Support	Additional information
1	reset	0 3 3 1 3 4 0 2 1 9 7		m	N	

Notification support

Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Support		Additional information
					Confirmed	Non-confirmed	
1	objectCreation	2 9 3 2 1 0 6		m	N	Y	
2	objectDeletion	2 9 3 2 1 0 7		m	N	Y	
3	stateChange	2 9 3 2 1 0 14		m	N	Y	operationalState, administrativeState
4	equipmentAlarm	2 9 3 2 1 0 4		m	N	Y	
5	environmentalAlarms	2 9 3 2 1 0 3		o	N	N	
6	processingErrorAlarms	2 9 3 2 1 0 10		o	N	Y	

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7	attributeValueChange	2 9 3 2 10 1		o	N	Y	availabilityStatus
8	communicationsAlarm	2 9 3 2 10 2		o	N	N	

Parameter support

Index	Parameter template label	Value of object identifier for parameter	Constraints and values	Status	Support	Additional information
1	logRecordIdParameter	0 0 17 821 0 5 1		o	N	
2	correlatedRecordNameParameter	0 0 17 821 0 5 2		o	N	
3	suspectObjectListParameter	0 0 17 821 0 5 3		o	N	
4	alarmEffectOnServiceParameter	0 0 13 3100 0 5 1		o	N	

5.4 circuitpackline

5.4.1 Instantiation Rules

The instantiation rules for circuit packs depend on the types of circuit packs. The following instantiation rules are considered here:

- An instance of circuitPackATT is automatically created by the agent when the circuit pack is inserted into the slot.
- An instance of circuitPackATT is individually deleted by the EML manager application.
- An instance of circuitPackATT is explicitly created by the EML manager application.
- An instance of circuitPackATT is automatically created by the agent when the shelf is instantiated, and the circuit pack must be present in its slot at that time.
- An instance of circuitPackATT can not be separately deleted by the EML manager application. Rather, it will be automatically deleted when the holding shelf is deleted.

Which circuit pack of the circuitPackType shall use which instantiation rule should be specified in relevant Implementation Agreement documents.

5.4.2 Naming Rules

The naming attribute of the circuitPack will always have the integer value zero (0).

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ALCATEL USA			3AL 55650 1042 DTZZA	R2.0	60

5.4.3 State Attributes

The operationalState of the circuitPackLine becomes 'disabled' if an alarm is issued with a 'disabling' probable cause (for example: Improper Removal, Internal Link Failure, Power Problem). When the circuitPackLine operationalState becomes 'disabled', the TPs supported by it also become disabled as a result. The operationalState of the circuitPackLine is 'enabled' when there is no alarm on it.

The administrativeState is supported for read-only.

5.4.4 Special behavior

- UserLabel: the common mnemonic of the circuitPack will be included in the userLabel.
Example: HSU8203, FXO8139, ...
- circuitPackType: the CLEI code, if available, will be used in circuitPackType. Otherwise the common mnemonic of the circuitPack will be duplicated here.
- serialNumber: will contain both serial number and part number. The format is specified as: P/N-xxxxxxxxxxxx followed by a space and S/N-xxxxxxxxxx. Or, if system-readable serial number is not available, serialNumber will contain automatic number generated by system and part number. The format is specified as: P/N-xxxxxxxxxxxx followed by a space and A/N-xxxxxxxxxx.
- The provisioning of the portMappingList will be allowed only for the protected boards.

5.4.5 MOCS

Managed object class support

Index	Managed object class template label	Value of object identifier for the managed object class	Support of all mandatory features (Y/N)	Is the actual class the same as the managed object class to which conformance is claimed? (Y/N)
1	circuitPackLine	0 3 3134 0 21 3 5	N	Y

Table 11: Actual class support

Index	Managed object class template label for actual class	Value of object identifier for managed object class definition of actual class	Additional information
ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS

ALCATEL USA		3AL 55650 1042 DTZZA	61
		1320 NM	R2.0

Package support

Index	Package template label	Value of object identifier for package	Constraints and values	Status	Support	Additional information
1	circuitPackLinePkg			m	Y	
2	circuitPackATTPkg			m	N	
3	createDeleteNorificationsPackage	0 0 13 3100 0 4 10		m	Y	
4	administrativeOperationalStatesPackage	0 0 13 3100 0 4 1		m	Y	
5	stateChangeNotificationPackage	0 0 13 3100 0 4 28		m	Y	
6	equipmentsEquipmentAlarmR1Package	0 0 13 3100 0 4 37		m	N	
7	currentProblemListPackage	0 0 13 3100 0 4 13		m	Y	
8	equipmentAlarmEffectOnServicePackage	0 0 13 3100 0 4 38		m	Y	
9	alarmSeverityAssignmentPointerPackage	0 0 13 3100 0 4 3		m	N	
10	circuitPackPackage			m	Y	
11	equipmentR1Package			m	Y	
12	environmentalAlarmR1Package	0 0 13 3100 0 4 36		c	N	
13	processingErrorAlarmR1Package	0 0 13 3100 0 4 39		c	Y	
14	equipmentPackage			m	Y	
15	attributeValueChangeNotificationPackage	0 0 13 3100 0 4 4		c	Y	
16	affectedObjectListPackage	0 0 13 3100 0 4 2		c	Y	
17	equipmentsEquipmentAlarmPackage	0 0 13 3100 0 4 15		c	N	

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18	environmentalAlarmsPackage	0 0 13 3100 0 4 14		c	N	
19	tmnCommunications.AlarmInformationPackage	0 0 13 3100 0 4 30		c	N	
20	processingErrorAlarmsPackage	0 0 13 3100 0 4 21		c	N	
21	userLabelPackage	0 0 13 3100 0 4 32		c	Y	
22	vendorNamePackage	0 0 13 3100 0 4 33		c	N	
23	versionPackage	0 0 13 3100 0 4 34		c	Y	
24	locationNamePackage	0 0 13 3100 0 4 17		c	Y	
25	topPackage		m	Y		
26	packagesPackage	2 9 3 2 4 16	c	Y		
27	allomorphicPackage	2 9 3 2 4 17	c	N		

Attribute support

Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Set by create		Get		Replace	
				Status	Support	Status	Support	Status	Support
1	packages	2 9 3 2 7 66	—	o	Y	—	—	—	—
2	allomorphs	2 9 3 2 7 50	—	o	N	—	—	—	—
3	objectClass	2 9 3 2 7 65	—	m	Y	—	—	—	—
4	nameBinding	2 9 3 2 7 63	—	m	Y	—	—	—	—
5	availableSignalRateList	0 3 3134 0 21 7 9	—	m	Y	—	—	—	—
6	portSignalRateList	0 3 3134 0 21 7 50	—	m	Y	m	N	—	—
7	portMappingList	0 3 3134 0 21 7 85	—	m	N	m	Y	—	—
8	administrativeState	2 9 3 2 7 31	PV: locked(0), unlocked(1)	m	Y	m	N	—	—
9	operationalState	2 9 3 2 7 35	—	m	Y	—	—	—	—
10	alarmStatus	0 0 13 3100 0 7 6	—	m	N	—	—	—	—
11	currentProblemList	0 0 13 3100 0 7 17	—	m	Y	—	—	—	—
12	alarmSeverityAssignmentProfilePointer	0 0 13 3100 0 7 5	—	m	N	m	N	—	—

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13	availabilityStatus	2 9 3 2 7 33	PV: 'empty', inTest(), failed(1), offLine(3), notinstalled(7).	-		m	Y	-	
14	serialNumber	0 0 13 3100 0 7 69		-		m	Y	-	
15	supportedByObjet ctList	0 0 13 3100 0 7 40		-		m	N	m	N
16	affectedObjectList	0 0 13 3100 0 7 2		-		o	Y	-	
17	userLabel	0 0 13 3100 0 7 50		-		o	Y	o	N
18	vendorName	0 0 13 3100 0 7 51		-		o	N	o	N
19	version	0 0 13 3100 0 7 52		-		o	Y	o	N
20	locationName	0 0 13 3100 0 7 27		-		o	Y	o	N
21	equipmentId	0 0 13 3100 0 7 20	PV: 0	m	Y	m	Y	-	
22	replaceable	0 0 13 3100 0 7 34		m	N	m	N	-	
23	circuitPackType	0 0 13 3100 0 7 54	PV: 'CLEI code' if available, otherwise duplicate userLabel	m	Y	m	Y	-	

(concluded) – Attribute support

Index	Add		Remove		Set to default		Additional information		
	Status	Support	Status	Support	Status	Support			
1	-	-	-	-					
2	-	-	-	-					
3	-	-	-	-					
4	-	-	-	-			circuitPack-equipmentHolder-autoCreated-R1		
5	-	-	-	-					
6	m	N	m	N	-				
7	m	N	m	N	-				
8	-	-	-	-			LIV: unlocked(1)		
9	-	-	-	-					
10	-	-	-	-					
11	-	-	-	-					

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ALCATEL USA 3AL 55650 1042 DTZZA .64

12	-	-	-	-		
13	-	-	-	-		
14	-	-	-	-	contains both serial and part numbers, format: P/N-xxxxxx S/N-xxxxxx. Or contains automatic and part numbers, format: A/N-xxxxxx S/N-xxxxxx.	
15	m	N	m	N	-	
16	-	-	-	-		
17	-	-	-	-		
18	-	-	-	-		
19	-	-	-	-		
20	-	-	-	-		
21	-	-	-	-	LIV: 0	
22	-	-	-	-		
23	-	-	-	-		

Action support

Index	Action type template label	Value of object identifier for action type	Constraints and values	Status	Support	Additional information
1	reset	0 3 3134 0 21 9 7		m	N	-

Notification support

Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Support		Additional information
					Confirmed	Non-confirmed	
1	objectCreation	2 9 3 2 10 6		m	N	Y	
2	objectDeletion	2 9 3 2 10 7		m	N	Y	
3	stateChange	2 9 3 2 10 14		m	N	Y	operationalState, administrativeState
4	equipmentAlarm	2 9 3 2 10 4		m	N	Y	
5	environmentalAlarms	2 9 3 2 10 3		o	N	N	
6	processingErrorAlarms	2 9 3 2 10 10		o	N	Y	
7	attributeValueChange	2 9 3 2 10 1		o	N	Y	availabilityStatus, portMappingList

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S	communications Alarm	2 9 3 2 10 2		o	N	N	
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Parameter support

Index	Parameter template label	Value of object identifier for parameter	Constraints and values	Status	Support	Additional information
1	logRecordIdParameter	0 0 17 821 0 5 1		o	N	
2	correlatedRecordNameParameter	0 0 17 821 0 5 2		o	N	
3	suspectObjectListParameter	0 0 17 821 0 5 3		o	N	
4	alarmEffectOnServiceParameter	0 0 13 3100 0 5 1		o	N	

5.5 ems

5.5.1 Instantiation Rules

The ems object is instantiated as soon as the EMS starts up. It is never deleted.

5.5.2 Naming Rules

The ems is named with a graphical string. The format is as follows: ANS-xxxx (where xxxx represents a unique four-digit number in the network). The first ems object that gets instantiated will be ANS-0001.

5.5.3 State Attributes

No state attributes supported.

5.5.4 Special Behavior

None.

5.5.5 MOCS

Managed object class support

Index	Managed object class template label	Value of object identifier for the managed object class	Support of all mandatory features (Y/N)	Is the actual class the same as the managed object class to which conformance is claimed? (Y/N)
ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	

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1	ems	0 3 3 1 3 4 0 2 1 3 1 9	N	Y
---	-----	-------------------------	---	---

Package support

Index	Package template label	Value of object identifier for package	Constraints and values	Status	Support	Additional information
1	emsPkg		m	Y		
2	topPackage		m	Y		
3	packagesPackage	2 9 3 2 4 1 6	c	Y		
4	allomorphicPac kage	2 9 3 2 4 1 7	c	N		

Attribute support

Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Set by create		Get		Replace	
				Status	Support	Status	Support	Status	Support
1	packages	2 9 3 2 7 6 6	-	o	Y	-			
2	allomorphs	2 9 3 2 7 5 0	-	o	N	-			
3	objectClass	2 9 3 2 7 6 5	-	m	Y	-			
4	nameBinding	2 9 3 2 7 6 3	-	m	Y	-			
5	emsId	0 3 3 1 3 4 0 2 1 7 2 0	ANS-xxxx (string 'ANS' followed by a dash, followed by a sequence of four digits starting at 0001)	-	m	Y	-		
6	systemTitle	2 9 3 2 7 5	-	m	N	m	N		
7	administrativeState	2 9 3 2 7 3 1	-	m	N	m	N		
8	operationalState	2 9 3 2 7 3 5	-	m	N	-			
9	alarmSeverityAssignmentProfilePorter	0 0 1 3 3 1 0 0 0 7 5	-	m	N	m	N		
10	subNetworkTime	0 3 3 1 3 4 0 2 1 7 6 8	-	m	N	m	N		
11	timeOfDayAllowableDrift	0 3 3 1 3 4 0 2 1 7 7 3	-	m	N	m	N		
12	version	0 0 1 3 3 1 0 0 0 7 5 2	-	m	N	-			

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13	vendorName	0 0 13 3100 0 7 51		-		m	Y	-	
14	uploadSchedule	0 3 3134 0 21 7 75	-	-		m	N	m	N
15	controllerNameLi st	0 3 3134 0 21 7 14	-	-		m	N	-	

(concluded) – Attribute support

Index	Add		Remove		Set to default		Additional information		
	Status	Support	Status	Support	Status	Support			
1	-	-	-	-					
2	-	-	-	-					
3	-	-	-	-					
4	-	-	-	-			ems-root		
5	-	-	-	-					
6	-	-	-	-					
7	-	-	-	-					
8	-	-	-	-					
9	-	-	-	-					
10	-	-	-	-					
11	-	-	-	-					
12	-	-	-	-					
13	-	-	-	-					
14	-	-	-	-					
15	-	-	-	-					

Action support

Index	Action type template label	Value of object identifier for action type	Constraints and values	Status	Support	Additional information
1	download	0 3 3134 0 21 9 2		m	N	
2	populate	0 3 3134 0 21 9 4		m	N	
3	upload	0 3 3134 0 21 9 9		m	N	
4	switchSoftware	0 3 3134 0 21 9 5		m	N	
5	newNE	0 3 3134 0 21 9 3		m	N	

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6	removeNE	0 3 3134 0 21 9 6		m	N	
7	switchNEToNewController	0 3 3134 0 21 9 8		m	N	

Notification support

Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Support		Additional information
					Confirmed	Non-confirmed	
1	processingErrorA alarm	2 9 3 2 10 10		m	N	N	
2	equipmentAlarm	2 9 3 2 10 4		m	N	N	
3	attributeValueChange	2 9 3 2 10 1		m	N	N	
4	objectCreation	2 9 3 2 10 6		m	N	N	
5	objectDeletion	2 9 3 2 10 7		m	N	N	
6	stateChange	2 9 3 2 10 14		m	N	N	

5.6 equipmentHolder

5.6.1 Instantiation Rules

There are different types of equipment holders. Currently, two major types are considered and their instantiation rules are specified separately as follows.

AUTO type: The equipment holders (bays, shelves and slots) are automatically instantiated by the Agent after initialization of the NE, and are never deleted when the NE is not deleted.

MANU type: The equipment holders (bays, shelves, and slots) are explicitly provisioned by EML manager application. The bays and shelves of this type need to be deleted explicitly by EML manager application.

5.6.2 Naming Rules

The naming attribute of the equipmentHolder (bay, shelf, slot) will be an integer.

5.6.3 State Attributes

No State Attributes supported.

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5.6.4 Special Behavior

The equipmentHolderType value (for bay or shelf) shall be specified as bayTYPE_XXXXXX' or shelfTYPE_XXXXXX', where TYPE is the type identifier either AUTO or MANU defined above, 'XXXXXX' is a string of characters and/or digits. The equipmentHolderType value (for slot) shall be specified as slot'XXXXXX', where 'XXXXXX' is a graphic string. The type of the slot is determined by the type of containing shelf.

Examples:

- bayAUTO_00001A
- shelfMANU_W1236
- slot00001

For each specific NE, some particular syntax format of 'XXXXXX' could be enforced and then should be specified in each Implementation Agreement document.

5.6.5 MOCS

Managed object class support

Index	Managed object class template label	Value of object identifier for the managed object class	Support of all mandatory features (Y/N)	Is the actual class the same as the managed object class to which conformance is claimed? (Y/N)
1	equipmentHolder	0 0 13 3100 0 3 32	N	Y

Package support

Index	Package template label	Value of object identifier for package	Constraints and values	Status	Support	Additional information
1	equipmentHolder Package		m	Y		
2	subordinateCircuitPackPackage	0 0 13 3100 0 4 41	PRESENT IF "the resource represented by this equipmentHolder instance is allowed to contain a circuit pack"	c	Y	
3	equipmentRIPackage		m	N		
4	alarmSeverityAss	0 0 13 3100 0 4 3	c	N		

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	ignmentPointerPa ckage				
5	:equipmentsEquip mentAlarmRIPac kage	0 0 13 3100 0 4 37	c	Y	
6	:environmentalAla rmRIPackage	0 0 13 3100 0 4 36	c	N	
7	:processingErrorA larmRIPackage	0 0 13 3100 0 4 39	c	N	
8	:equipmentsPackag e		m	Y	
9	:createDeleteNotif icationsPackage	0 0 13 3100 0 4 10	c	Y	
10	:attributeValueCh angeNotification Package	0 0 13 3100 0 4 4	c	Y	
11	:stateChangeNotif icationPackage	0 0 13 3100 0 4 28	c	Y	
12	:administrativeOp erationalStatesPa ckage	0 0 13 3100 0 4 1	c	Y	
13	:affectedObjectList Package	0 0 13 3100 0 4 2	c	N	
14	:topPackage		m	Y	
15	:packagesPackage	2 9 3 2 4 16	c	Y	
16	:allomorphicPacka ge	2 9 3 2 4 17	c	N	
17	:currentProblemLi stPackage	0 0 13 3100 0 4 13	c	Y	
18	:locationNamePac kage	0 0 13 3100 0 4 17	c	Y	
19	:versionPackage	0 0 13 3100 0 4 34	c	N	
20	:vendorNamePacka ge	0 0 13 3100 0 4 33	c	N	
21	:userLabelPackag e	0 0 13 3100 0 4 32	c	N	
22	:processingErrorA larmPackage	0 0 13 3100 0 4 21	c	N	
23	:InnCommunicati onsAlarmsInforma tionPackage	0 0 13 3100 0 4 30	c	N	
24	:environmentalAla rmPackage	0 0 13 3100 0 4 34	c	N	
25	:equipmentsEquip mentAlarmPacka ge	0 0 13 3100 0 4 15	c	N	

Attribute support

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Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Set by create		Get		Replace	
				Status	Support	Status	Support	Status	Support
1	acceptableCircuitPackTypeList	0 0 13 3100 0 7 58	-	-	o	Y	o	N	
2	packages	2 9 3 2 7 66	-	-	o	Y	-		
3	allomorphs	2 9 3 2 7 50	-	-	o	N	-		
4	objectClass	2 9 3 2 7 65	-	-	m	Y	-		
5	nameBinding	2 9 3 2 7 63	-	-	m	Y	-		
6	operationalState	2 9 3 2 7 35	-	-	o	Y	-		
7	equipmentHolderType	0 0 13 3100 0 7 57	m	Y	m	Y	-		
8	equipmentId	0 0 13 3100 0 7 20	m	Y	m	Y	-		
9	holderStatus	0 0 13 3100 0 7 59	-	-	o	Y	-		
10	subordinateCircuitPackSoftwareLoad	0 0 13 3100 0 7 60	-	-	o	N	o	N	
11	equipmentHolderAddress	0 0 13 3100 0 7 56	m	N	m	N	-		
12	currentProblemList	0 0 13 3100 0 7 17	-	-	o	Y	-		
13	alarmSeverityAssignmentProfilePointer	0 0 13 3100 0 7 5	-	-	o	N	o	N	
14	alarmStatus	0 0 13 3100 0 7 6	-	-	o	N	-		
15	serialNumber	0 0 13 3100 0 7 69	-	-	m	N	-		
16	supportedByObjectList	0 0 13 3100 0 7 40	-	-	m	N	m	N	
17	administrativeState	2 9 3 2 7 31	-	-	o	N	o	N	
18	affectedObjectList	0 0 13 3100 0 7 2	-	-	o	N	-		
19	userLabel	0 0 13 3100 0 7 50	-	-	o	N	o	N	
20	vendorName	0 0 13 3100 0 7 51	-	-	o	N	o	N	
21	version	0 0 13 3100 0 7 52	-	-	o	N	o	N	
22	locationName	0 0 13 3100 0 7 27	-	-	o	Y	o	N	
23	replaceable	0 0 13 3100 0 7 34	m	N	m	N	-		

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(concluded) – Attribute support

Index	Add		Remove		Set to default		Additional information
	Status	Support	Status	Support	Status	Support	
1	o	Y	o	Y	-	-	
2	-	-	-	-	-	-	
3	-	-	-	-	-	-	
4	-	-	-	-	-	-	
5	-	-	-	-	-	-	equipment--managedElement--R1, equipment--equipmentHolder
6	-	-	-	-	-	-	
7	-	-	-	-	-	-	
8	-	-	-	-	-	-	
9	-	-	-	-	-	-	
10	-	-	-	-	-	-	
11	-	-	-	-	-	-	
12	-	-	-	-	-	-	
13	-	-	-	-	-	-	
14	-	-	-	-	-	-	
15	-	-	-	-	-	-	
16	m	N	m	N	-	-	
17	-	-	-	-	-	-	
18	-	-	-	-	-	-	
19	-	-	-	-	-	-	
20	-	-	-	-	-	-	
21	-	-	-	-	-	-	
22	-	-	-	-	-	-	bayTYPE_XXXXXX, shelfTYPE_XXXXXX, slotXXXXXX, where TYPE is either AUTO or MANU, and XXXXXX is a graphic string.
23	-	-	-	-	-	-	

Notification support

Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Support		Additional information
					Confirmed	Non-confirmed	

ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
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1	equipmentAlarm	2 9 3 2 10 4		o	N	Y	
2	communicationsAlarm	2 9 3 2 10 2		o	N	N	
3	objectCreation	2 9 3 2 10 6		o	N	Y	
4	objectDeletion	2 9 3 2 10 7		o	N	Y	
5	environmentalAlarm	2 9 3 2 10 3		o	N	N	
6	processingErrorAlarm	2 9 3 2 10 10		o	N	N	
7	attributeValueChange	2 9 3 2 10 1		o	N	Y	holderStatus
8	stateChange	2 9 3 2 10 14		o	N	N	

Parameter support

Index	Parameter template label	Value of object identifier for parameter	Constraints and values	Status	Support	Additional information
1	logRecordIdParameter	0 0 17 821 0 5 1		o	N	
2	correlatedRecordNameParameter	0 0 17 821 0 5 2		o	N	
3	suspectObjectListParameter	0 0 17 821 0 5 3		o	N	

5.7 managedElementR1

5.7.1 Instantiation Rules

An instance of this type is created/deleted explicitly by the agent when an NE is registered into/de-registered from the EMS.

5.7.2 Naming Rules

The naming attribute (managedElementId) is an ASN.1 graphic string that consists of the following pattern:

- City (4 char)
- State (2 char)
- Location (5 char)
- Floor (2 char)
- Aisle (4 char)
- Bay (2 char) (This is the Bay where the CPU cards are located)
- Mounting Position (1 char) (This is the Shelf where the CPU is located)

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5.7.3 State Attributes

The administrativeState is not used. The operationalState will become disabled if the network element reboots.

The alarmStatus (highest severity for current alarms in the whole network element) will be maintained.

5.7.4 Special Behaviour

The attribute vendorName contains information for both vendor and NE type. The format is defined as: Alcatel-XXXXXX. Where XXXXXX is a graphic string representing the NE type.

Example: Alcatel-1603SM, Alcatel-1630SX.

5.7.5 MOCS

Managed object class support

Index	Managed object class template label	Value of object identifier for the managed object class	Support of all mandatory features (Y/N)	Is the actual class the same as the managed object class to which conformance is claimed? (Y/N)
1	managedElementR1	0 0 13 3100 0 3 27	N	Y

Package support

Index	Package template label	Value of object identifier for package	Constraints and values	Status	Support	Additional information
1	managedElementR1Package			m	Y	
2	alarmSeverityAssignmentPorterPackage	0 0 13 3100 0 4 3	PRESENT IF "The managed object supports configuration of alarm severities"	c	N	
3	managedElementR1Package			m	Y	

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4	createDeleteNotificationsPackage	0 0 13 3100 0 4 10		c	Y	
5	attributeValueChangeNotificationPackage	0 0 13 3100 0 4 4		c	Y	
6	stateChangeNotificationPackage	0 0 13 3100 0 4 28		c	Y	
7	audibleVisualLocalAlarmPackage	0 0 13 3100 0 4 5		c	N	
8	resetAudibleAlarmPackage	0 0 13 3100 0 4 23		c	N	
9	userLabelPackage	0 0 13 3100 0 4 32		c	Y	
10	vendorNamePackage	0 0 13 3100 0 4 33		c	Y	
11	versionPackage	0 0 13 3100 0 4 34		c	Y	
12	locationNamePackage	0 0 13 3100 0 4 17		c	Y	
13	currentProblemlistPackage	0 0 13 3100 0 4 13		c	Y	
14	externalTimePackage	0 0 13 3100 0 4 16		c	Y	
15	systemTimingSourcePackage	0 0 13 3100 0 4 29		c	N	
16	topPackage			m	Y	
17	packagesPackage	2 9 3 2 4 16		c	Y	
18	allosmorphicPackage	2 9 3 2 4 17		c	N	

Attribute support

Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Set by create		Get		Replace	
				Status	Support	Status	Support	Status	Support
1	alarmSeverityAssignmentProfilePointer	0 0 13 3100 0 7 5	-	o	N	o	N		

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2	userLabel	0 0 13 3100 0 7 50	-	o	Y	o	Y
3	vendorName	0 0 13 3100 0 7 51	-	o	Y	o	N
4	version	0 0 13 3100 0 7 52	-	o	Y	o	N
5	locationName	0 0 13 3100 0 7 27	-	o	Y	o	Y
6	currentProble mList	0 0 13 3100 0 7 17	-	o	Y	-	
7	externalTime	0 0 13 3100 0 7 21	-	o	Y	o	Y
8	systemTiming Source	0 0 13 3100 0 7 41	-	o	N	o	N
9	managedElem entId	0 0 13 3100 0 7 28	-	m	Y	-	
10	systemTitle	2 9 3 2 7 5	-	m	N	m	N
11	alarmStatus	0 0 13 3100 0 7 6	-	m	Y	-	
12	administrative State	2 9 3 2 7 31	-	m	N	m	N
13	operationalSta te	2 9 3 2 7 35	-	m	Y	-	
14	usageState	2 9 3 2 7 39	-	m	N	-	
15	packages	2 9 3 2 7 66	-	o	Y	-	
16	ellomorphs	2 9 3 2 7 50	-	o	N	-	
17	objectClass	2 9 3 2 7 65	-	m	Y	-	
18	nameBinding	2 9 3 2 7 63	-	m	Y	-	

(concluded) – Attribute support

Index	Add		Remove		Set to default		Additional information
	Status	Suppor	Status	Suppor	Status	Suppor	

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	t	t	t	
1	-	-	-	
2	-	-	-	
3	-	-	-	Contains both vendor name and NE type. Format: Alcatel-XXXXXX
4	-	-	-	
5	-	-	-	
6	-	-	-	
7	-	-	-	
8	-	-	-	
9	-	-	-	A string of characters with the following format: CCCCSSLLLLFFAAABBB where C=city, S=state, L=location, F=floor, A=aisle, B=bay and M=mouting position.
10	-	-	-	
11	-	-	-	
12	-	-	-	
13	-	-	-	
14	-	-	-	
15	-	-	-	
16	-	-	-	
17	-	-	-	
18	-	-	-	managedElement-ems

Action support

Index	Action type template label	Value of object identifier for action type	Constraints and values	Status	Support	Additional information
1	allowAudibleVisualLocalAlarm	0 0 13 3100 0 9 3		o	N	
2	inhibitAudibleVisualLocalAlarm	0 0 13 3100 0 9 6		o	N	
3	resetAudibleAlarm	0 0 17 821 0 9 2		o	N	

Notification support

Index	Notification type template label	Value of object identifier for	Constraints and values	Status	Support	Additional information
ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS			

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		notification type			Confi- med	Non- confirm- ed	
1	environmental Alarm	2 9 3 2 10 3		m	N	Y	
2	equipmentAlarm	2 9 3 2 10 4		m	N	Y	
3	communicationsAlarm	2 9 3 2 10 2		m	N	Y	
4	processingErrorOrAlarm	2 9 3 2 10 10		m	N	N	
5	objectCreation	2 9 3 2 10 6		o	N	Y	
6	objectDeletion	2 9 3 2 10 7		o	N	Y	
7	attributeValueChange	2 9 3 2 10 1		o	N	Y	alarmStatus
8	stateChange	2 9 3 2 10 14		o	N	Y	operationalState

Parameter support

Index	Parameter template label	Value of object identifier for parameter	Constraints and values	Status	Support	Additional information
1	logRecordIdParameter	0 0 17 821 0 5 1		o	N	
2	correlatedRecordNameParameter	0 0 17 821 0 5 2		o	N	
3	suspectObjectListParameter	0 0 17 821 0 5 3		o	N	

5.8 managementLink

5.8.1 Instantiation Rules

An instances of this managed object class is created automatically by the agent (EMS) for a communication link the agent establishes with an external process (communication link exists between EMS and NE or two EMS systems) whenever an instance managedElementR1 is created and a communication link is established between EMS and the NE An instance of this object class is deleted whenever the associated NE is deleted.

5.8.2 Naming Rules

The naming attribute (`managementLinkId`) of a `managementLink` object should take on the value of the naming attribute (`managedElementId`) of the NE associated with that link.

5.8.3 State Attributes

The `administrativeState` attribute is supported for read-only.

The `operationalState` will become disabled if the link between the EM and the NE goes down (NE is unreachable), and enabled when the link goes up; the `operationalState` will also become disabled whenever the `administrativeState` has been set to locked.

5.8.4 Special Behavior

None.

5.8.5 MOCS

Managed object class support				
Index	Managed object class template label	Value of object identifier for the managed object class	Support of all mandatory features (Y/N)	Is the actual class the same as the managed object class to which conformance is claimed? (Y/N)
1	managementLink	0 3 3134 0 21 3 22	N	Y

Package support						
Index	Package template label	Value of object identifier for package	Constraints and values	Status	Support	Additional information
1	managementLink Pkg		m	Y		
2	topPackage		m	Y		
3	packagesPackage	2 9 3 2 4 16	e	Y		
4	allomorphicPacks	2 9 3 2 4 17	e	N		

Attribute support									
Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Set by create		Get		Replace	
				Status	Support	Status	Support	Status	Support
1	packages	2 9 3 2 7 66		m	Y				
2	allomorphs	2 9 3 2 7 50		m	N				
3	objectClass	2 9 3 2 7 65		m	Y				

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4	nameBinding	2 9 3 2 7 63		-		m	Y	-	
5	managementLink	0 3 3134 0 21 7 39		-		m	Y	-	
6	managerNodePointer	0 3 3134 0 21 7 40		-		m	Y	-	
7	agentNodePointer	0 3 3134 0 21 7 2		-		m	Y	-	
8	administrativeState	2 9 3 2 7 31	PV; locked, unlocked	-		m	Y	m	N
9	operationalState	2 9 3 2 7 35		-		m	Y	-	
10	watchdogParameters	0 3 3134 0 21 7 81		-		m	N	m	N
11	alarmSeverityAssignmentProfilePointer	0 0 13 3100 0 7 5		-		m	N	m	N
12	flowControl	0 3 3134 0 21 7 32		-		m	N	m	N

(concluded) - Attribute support

Index	Add		Remove		Set to default		Additional information		
	Status	Support	Status	Support	Status	Support			
1	-	-							
2	-								
3	-	-							
4	-	-		-			managementLink-ems		
5	-	-							
6	-	-		-			Points to ems		
7	-	-		-			Points to managedElementR1		
8	-	-		-			LIV: unlocked		
9	-	-							
10	-	-							
11	-	-							
12	m	Y	m	Y					

Notification support

Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Support		Additional information
					Confirmed	Non-confirmed	
1	communicationsAlarm	2 9 3 2 10 2		m	N	N	
	attributeValueChange	2 9 3 2 10 1		m	N	N	
3	objectCreation	2 9 3 2 10 6		m	N	Y	
4	objectDeletion	2 9 3 2 10 7		m	N	Y	
5	stateChange	2 9 3 2 10 14		m	N	Y	operationalState,

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						administrativeState
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5.9 equipmentprotectiongroup

5.9.1 Instantiation Rules

An instances of this managed object class will be created when a circuit pack is intantiated in the 'Protecting' slot in a protection group. An equipmentProtectionGroup instance will always be present as long as there is at least one circuit pack instance present (protected or protection).

5.9.2 Naming Rules

The naming attribute (ProtectionGroupId) will contain the Bay, Shelf and Slot number of the protecting circuit pack.

Example:

If the protecting circuit pack is on bay 2, shelf 2, and slot 1, then the naming attribute of this protection group will be 02-02-01.

5.9.3 State Attributes

The operationalState will become disabled if the operationalState of the protecting circuit pack becomes disabled.

5.9.4 Special Behaviour

None.

5.9.5 MOCS

Managed object class support

Index	Managed object class template label	Value of object identifier for the managed object class	Support of all mandatory features (Y/N)	Is the actual class the same as the managed object class to which conformance is claimed? (Y/N)
1	equipmentProtectionGroup	0 3 3134 0 21 3 20	N	Y

Package support

Index	Package template label	Value of object identifier for package	Constraints and values	Status	Support	Additional information	
1	equipmentProtectionGroupPkg			m	Y		
2	protectionGroupPkgR1			m	Y		

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3	createDeleteNotificationsPackage	0 0 13 3100 0 4 10		c	Y		
4	attributeValueChangeNotificationPackage	0 0 13 3100 0 4 4		c	Y		
5	topPackage			m	Y		
6	packagesPackage	2 9 3 2 4 16		c	Y		
7	allomorphicPackage	2 9 3 2 4 17		c	N		

Attribute support

Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Set by create		Get		Replace	
				Status	Support	Status	Support	Status	Support
1	packages	2 9 3 2 7 66	-	m	Y				
2	allomorphs	2 9 3 2 7 50	-	m	N				
3	objectClass	2 9 3 2 7 65	-	m	Y				
4	nameBinding	2 9 3 2 7 63	-	m	Y				
5	protectionGroupObject	0 0 7 774 127 3 0 7 6	-	m	Y				
6	operationalState	2 9 3 2 7 35	-	m	Y				
7	protectionGroupType	0 0 7 774 127 3 0 7 7	PV: colon -	m	Y	m	N		
8	revertive	0 0 7 774 127 3 0 7 14		m	Y	m	N		
9	waitForRestoreTime	0 0 7 774 127 3 0 7 18		m	N	m	N		
10	lockedInCondition	0 3 3134 0 21 7 37		m	N	m	N		
11	alarmSeverityAssignmentProfilePointer	0 0 13 3100 0 7 5	-	m	N	m	N		
12	currentProblemList	0 0 13 3100 0 7 17		m	Y				
13	supportedByObjectList	0 0 13 3100 0 7 40	-	m	N				
14	availabilityStatus	2 9 3 2 7 33	-	m	N				

(concluded) - Attribute support

Index	Add	Remove		Set to default		Additional information	
		Status	Support	Status	Support	Status	Support
1	-	-	-	-	-		
2	-	-	-	-	-		
3	-	-	-	-	-		
4	-	-	-	-	-	protectionGroupR1-managedElement	
5	-	-	-	-	-		
6	-	-	-	-	-	LIV: enabled	

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7	-	-	-	-	LIV: colon
8	-	-	m	N	
9	-	-	-	-	
10	-	-	-	-	
11	-	-	-	-	
12	-	-	-	-	
13	-	-	-	-	
14	-	-	-	-	

Action support

Index	Action type template label	Value of object identifier for action type	Constraints and values	Status	Support	Additional information
1	invokeProtection	0 0 7 774 127 3 0 9 2		m	N	
2	releaseProtection	0 0 7 774 127 3 0 9 3		m	N	

Notification support

Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Support		Additional information
					Confir med	Non-confirmed	
1	protectionSwitch ReportingR1	0 0 7 774 127 3 0 10 2		m	N	Y	
2	stateChange	2 9 3 2 10 14		m	N	Y	operationalState
3	objectDeletion	2 9 3 2 10 7		o	N	Y	
4	objectCreation	2 9 3 2 10 6		o	N	Y	
5	attributeValueChange	2 9 3 2 10 1		o	N	N	
6	communications Alarm	2 9 3 2 10 2		m	N	N	

Parameter support

Index	Parameter template label	Value of object identifier for parameter	Constraints and values	Status	Support	Additional information
1	equimentProtectionStatusParameter	0 3 3134 0 21 5 2		o	Y	
2	releaseLockedInParameterATT	0 3 3134 0 21 5 5		o	N	
3	invokeProtection Error	0 0 7 774 127 3 0 5 1		o	N	
4	releaseProtection Error	0 0 7 774 127 3 0 5 2		o	N	

5.10 equipmentprotectionunit

5.10.1 Instantiation Rules

An instance of this object shall be automatically instantiated by the agent when a circuit Pack is created and this circuit pack is under the protection within an equipmentProtectionGroup. An instance of this object shall be automatically deleted when the circuit pack it represents within the equipmentProtectionGroup is deleted.

5.10.2 Naming Rules

The naming attribute (protectionUnitId) for the protecting unit will be zero (0). The naming attribute for the protected unit will be 1 through N, where N is the maximum number of circuit packs protected in the equipmentProtectionGroup.

5.10.3 State Attributes

Not applicable.

5.10.4 Special Behaviour

None.

5.10.5 MOCS

Managed object class support

Index	Managed object class template label	Value of object identifier for the managed object class	Support of all mandatory features (Y/N)	Is the actual class the same as the managed object class to which conformance is claimed? (Y/N)
1	equipmentProtectionUnit	0 3 3134 0 21 3 21	N	Y

Package support

Index	Package template label	Value of object identifier for package	Constraints and values	Status	Support	Additional information
1	equipmentProtectionUnitPkg			m	Y	
2	protectionUnitPkg			m	Y	
3	priortyPkg	0 0 7 774 127 3 0 4 5		c	N	
4	attributeValueChangeNotificationPackage	0 0 13 3100 0 4 4		c	Y	
5	topPackage			m	Y	

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6	packagesPackage	2 9 3 2 4 16		c	Y		
7	allomorphicPacks ge	2 9 3 2 4 17		c	N		

Attribute support

Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Set by create		Get		Replace	
				Status	Support	Status	Support	Status	Support
1	packages	2 9 3 2 7 66		-	m	Y	-		
2	allomorphs	2 9 3 2 7 50		-	m	N	-		
3	objectClass	2 9 3 2 7 65		-	m	Y	-		
4	nameBinding	2 9 3 2 7 63		-	m	Y	-		
5	unreliableResourcePointer	0 0 7 774 127 3 0 7 17		-	m	Y	-		
6	protecting	0 0 7 774 127 3 0 7 12		-	m	Y	-		
7	equipmentProtect ionStatus	0 3 3134 0 21 7 26		-	m	Y	-		
8	protectionUnitId	0 0 7 774 127 3 0 7 11		-	m	Y	-		
9	reliableResource Pointer	0 0 7 774 127 3 0 7 13			m	N			
10	priority	0 0 7 774 127 3 0 7 3			m	N	m	N	

(concluded) - Attribute support

Index	Add		Remove		Set to default		Additional information	
	Status	Support	Status	Support	Status	Support		
1								
2								
3								
4							protectionUnit-protectionGroupR1	
5							Points to circuitPackLine	
6							LIV: TRUE for protecting unit, FALSE for all other protected units	
7								
8								
9								
10	-							

Notification support

Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Support		Additional information
					Confir. med	Non- confirme	

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	attributeValueChange	2.9.3.2.10.1		o	N	Y	d
1	ange					equipmentProtectionSt	atus

5.11 softwareR1

5.11.1 Instantiation Rules

The nature of the software and data represented by softwareR1 instances determines the instantiation rules used for the instances. Two major types of instantiation rules are described below.

An instance of this object (representing regular software or data) is created automatically by the agent at initialization time. The instance will not be deleted until the NE is deleted.

An instance of this object (representing standby software or data) is created automatically by the agent when a download operation has completed successfully. The instance is deleted automatically by the agent when a switchSoftware operation (future) has completed successfully.

5.11.2 Naming Rules

The naming attribute (softwareId) is a graphic string.

5.11.3 State Attributes

The operationalState is enabled if the instance is able to perform its normal functions. The operationalState becomes disabled when the instance becomes unable to perform its normal functions (e.g. software corrupted or problem with optical disk).

5.11.4 Special Behaviour

1. Backup

To create a back-up on the NE, the upload operation is used. The softwareR1 instance representing active data of NE must be specified as the source, and the target (a graphicalString) must specify the back-up device. Upon successful completion of the back-up, the time indication in the version attribute of the corresponding softwareR1 object shall be updated. An attribute value change notification for the version will also be emitted.

2. Version Attribute

The semantics of the version attribute are the following: 'V-<managedElementId>:<dateTime>:<status>', where the format of <dateTime> and <status> is described below.

<dateTime> -- the format of this field is as follows: 'yyyy-mm-dd hh-mm-ss'. For the active database of NE, this date will represent the activation date and time.

ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
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- YYYY year
- mm month
- dd day
- hh hour
- mm minute
- ss second

<status> -- represents either the value 'inactive' or the value 'active'.

5.11.5 MOCS

Managed object class support

Index	Managed object class template label	Value of object identifier for the managed object class	Support of all mandatory features (Y/N)	Is the actual class the same as the managed object class to which conformance is claimed? (Y/N)
1	softwareR1	0 0 13 3100 0 3 29	Y	Y

Package support

Index	Package template label	Value of object identifier for package	Constraints and values	Status	Support	Additional information
1	alarmSeverityAssignmentPointerPackage	0 0 13 3100 0 4 3	PRESENT IF "the managed object supports configuration of alarm severities"	c	Y	
2	softwareProcessingErrorAlarmRIPackage	0 0 13 3100 0 4 40	PRESENT IF "an instance supports it."	c	Y	
3	softwarePackage			m	Y	
4	createDeleteNotificationsPackage	0 0 13 3100 0 4 10		c	Y	
5	attributeValueChangeNotificationPackage	0 0 13 3100 0 4 4		c	Y	
6	stateChangeNotificationPackage	0 0 13 3100 0 4 28		c	Y	
7	administrativeOperationalStatesPackage	0 0 13 3100 0 4 1		c	Y	
8	affectedObjectListPackage	0 0 13 3100 0 4 2		c	Y	
9	softwareProcessingErrorAlarmPackage	0 0 13 3100 0 4 26		c	N	
10	userLabelPackage	0 0 13 3100 0 4 32		c	Y	

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11	vendorNamePackage	0 0 13 3100 0 4 33		c	N	
12	versionPackage	0 0 13 3100 0 4 34		c	Y	
13	currentProblemListPackage	0 0 13 3100 0 4 13		c	Y	
14	topPackage			m	Y	
15	packagesPackage	2 9 3 2 4 16		c	Y	
16	allomorphicPackage	2 9 3 2 4 17		c	N	

Attribute support

Index	Attribute template label	Value of object identifier for attribute	Constraints and values	Set by create		Get		Replace	
				Status	Support	Status	Support	Status	Support
1	administrativeState	2 9 3 2 7 31	-	m	N	m			
2	alarmStatus	0 0 13 3100 0 7 6	-	m	N	-			
3	operationalState	2 9 3 2 7 35	-	m	Y	-			
4	affectedObjectList	0 0 13 3100 0 7 2	-	m	N	-			
5	userLabel	0 0 13 3100 0 7 50	-	m	Y	m	N		
6	vendorName	0 0 13 3100 0 7 51	-	m	Y	m			
7	softwareId	0 0 13 3100 0 7 38	m Y	m	Y	-			
8	nameBinding	2 9 3 2 7 63	-	m	Y	-			
9	objectClass	2 9 3 2 7 65	-	m	Y	-			
10	allomorphs	2 9 3 2 7 50	-	m	N	-			
11	packages	2 9 3 2 7 66	-	m	Y	-			
12	version	0 0 13 3100 0 7 52	-	m	Y	m	N		
13	currentProblemList	0 0 13 3100 0 7 17	-	m	Y	-			
14	alarmSeverityAssignmentProfilePointer	0 0 13 3100 0 7 5	-	m	N	m	N		

(concluded) - Attribute support

Index	Add		Remove		Set to default		Additional information	
	Status	Support	Status	Support	Status	Support		
1	-		-		-			
2	-		-		-			
3	-		-		-			
4	-		-		-		software-managedElement	

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5	-	-	-	-		
6	-	-	-	-		
7	-	-	-	-		
8	-	-	-	-		
9	-	-	-	-		
10	-	-	-	-		
11	-	-	-	-		
12	-	-	-	-		
13	-	-	-	-		
14	-	-	-	-		

Notification support

Index	Notification type template label	Value of object identifier for notification type	Constraints and values	Status	Support		Additional information
					Confirmed	Non-confirmed	
1	stateChange	2 9 3 2 10 14		o	N	Y	operationalState
2	attributeValueChange	2 9 3 2 10 1		o		Y	version
3	objectDeletion	2 9 3 2 10 7		o		Y	
4	objectCreation	2 9 3 2 10 6		o		Y	
5	processingErrorAlarm	2 9 3 2 10 10		o		Y	

Parameter support

Index	Parameter template label	Value of object identifier for parameter	Constraints and values	Status	Support	Additional information
1	logRecordIdParameter	0 0 17 821 0 5 1		o	N	
2	correlatedRecordNameParameter	0 0 17 821 0 5 2		o	N	
3	suspectObjectListParameter	0 0 17 821 0 5 3		o	N	

6 Major scenarios

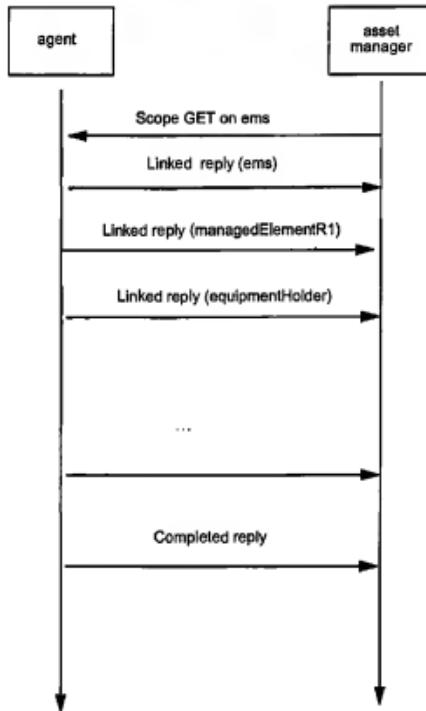
In this section, various scenarios are provided.

6.1 Scenarios for Q3 interface

6.1.1 Discovery after Communication Establishment

This scenarios describes the discovery process initiated by the online network inventory resource manager after the communication link to EMS has been set up.

ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL-USA			3AL 55650 1042 DTZZA	.90

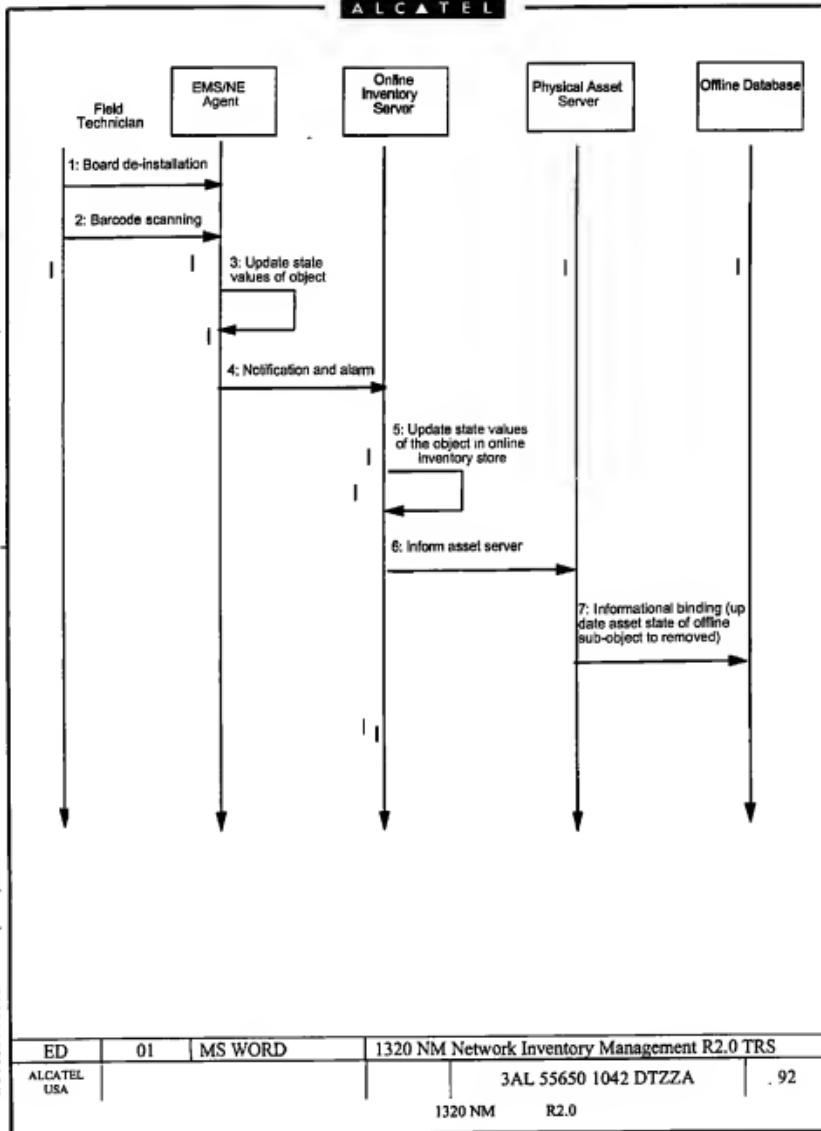


The 1320NM online inventory manager:

- send an Scope GET operation on the ems to get all information.
- send M-CREATE for an *eventForwardingDiscriminator* to register for events on ems, managedElementR1, equipmentHolder, circuitPackLine, circuitPackATT.

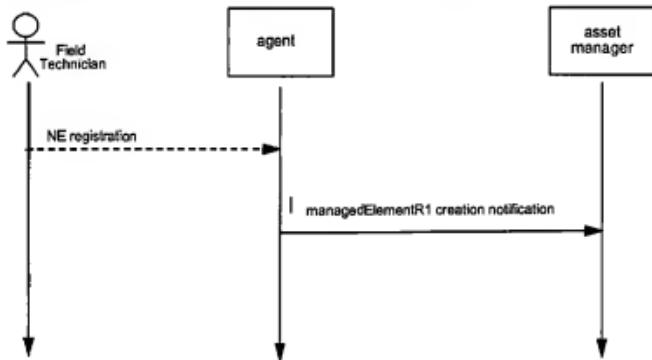
As soon as this sequence is finished, the online inventory manager enters its main loop, waiting for reception of events or requests from the user (via the graphical user interface).

ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	91



6.1.2 NE registration

This scenario describes the manual registration process of a new NE to the agent.



The agent:

- Create a new instance of *managedElementR1* and sends a notification (only the value of attribute *managedElementId* is available at NE registration).
- Create a instance of *managementLink* for this NE under *ems*. No creation notification for it.
- Set the *operationalState* value of *managementLink* to disabled.

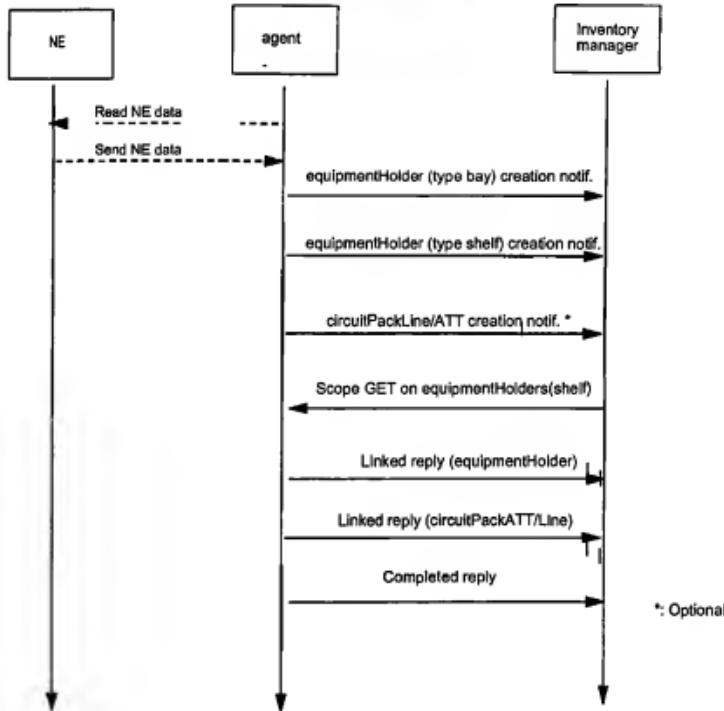
The 1320NM inventory manager:

- Create a new instance of *managedElementR1* in its online database when receiving a creation notification.

6.1.3 NE Initialization

This scenarios describes the initialization process when a new registered NE first becomes reachable from the agent.

ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA 1320 NM R2.0	93



The agent:

- Set the operationalState of the *managementLink* to enabled.
- Create instance(s) of *equipmentHolder* of type bay and send notification(s) to the manager.
- Create instance(s) of *equipmentHolder* of type shelf.
- Create instance(s) of *equipmentHolder* of type slot.

ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	94

1320 NM R2.0

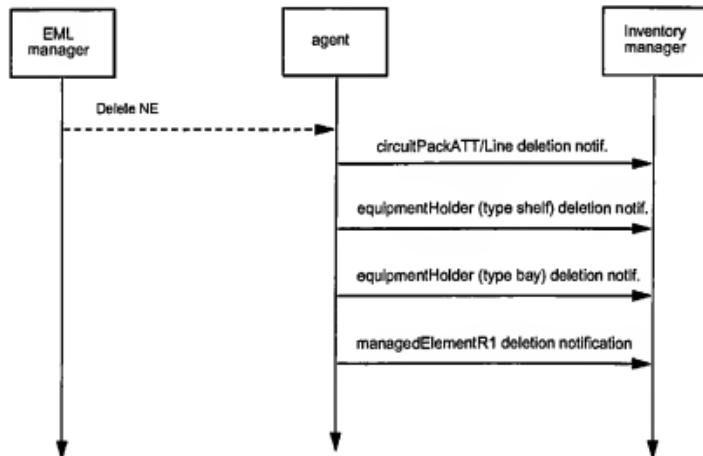
- Send creation notifications for *equipmentHolder* of type shelf. This notification *should be sent only after* the creation of *equipmentHolder* instances of type slots under that shelf by the agent.
- Create instances of *circuitPackATT/Line*, and send notifications (optional).

The 1320NM inventory manager:

- When receiving a creation notification for *equipmentHolder* of type shelf, send a scope M-GET on *equipmentHolder* (shelf).

6.1.4 NE deletion

This scenario describes the process of NE deletion.



The agent:

- Delete instance(s) of *circuitPackATT/Line* and send the deletion notification(s) of *circuitPackATT/Line* to the manager.
- Delete the instance(s) of *equipmentHolder* (shelf) and send the deletion notification(s) of *equipmentHolder* to the manager.

ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	95

- Delete the instance(s) of equipmentHolder (bay) and send the deletion notification(s) of equipmentHolder to the manager.
- Delete the instance of managedElementR1 and send the deletion notification of managedElementR1 to the manager.

N.B. According to the name binding rules defined in M3100 standards, the equipment holder or the managed element can only be deleted if it has no contained objects. Therefore, in order to delete the managedElementR1, the agent has to first delete all circuit packs and equipment holders before deleting the managedElementR1, as shown in the above diagram. (The deletion notifications of circuit packs and equipment holders are not necessary to the manager in this case since the manager will delete all the contained objects under the managedElementR1 when it receives the deletion notification of managedElementR1. However the agent may not have easy way to distinguish between this case and the simple deletion of a card, for example).

The asset manager:

- Upon reception of the deletion notification of managedElementR1, the inventory manager will discard all information related to that NE from its database.

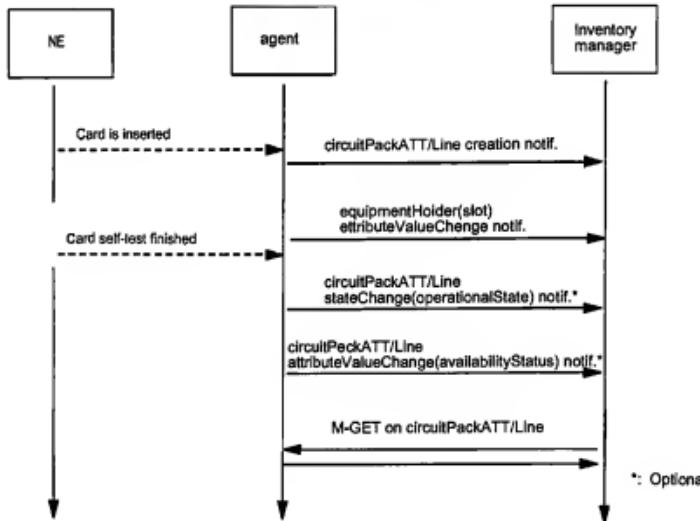
N.B. The 1320NM inventory manager assumes that upon the reception of a managedElementR1 deletion notification, all contained objects are already deleted (equipmentHolder, ...). Thus, it will delete all remaining objects in the online database under the managedElementR1.

6.1.5 The new card is inserted (correct type, good card)

The scenario describes that a new card of correct type is inserted into a slot for the first time, and the card functions well.

In general, when a card of correct type is inserted into a slot, an automatic self-test on the card will be performed. During the self-test period, the operationalState of the circuitPackATTI/Line should be disabled, and the availabilityStatus of the circuitPackATTI/Line should be inTest.

ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	96



The agent:

- Create the instance of circuitPackATT/Line and send the creation notification of circuitPackATT/Line to the manager.
- Change the holderStatus value of equipmentHolder that contains the newly inserted card: holderEmpty → inTheAcceptableList and send the attributeValueChange notification to the manager.
- Change operationalState value of the circuitPackATT/Line instance: disabled → enabled and send the stateChange notification to the manager. (The notification is optional in the sense that when the self-test time is negligible and the self-test can be finished before the creation notification of circuitPackATT/Line is sent out. Then, this notification is not necessary.)
- Change availabilityStatus value of the circuitPackATT/Line instance: offLine → available (empty set) and send the attributeValueChange notification to the manager. (The notification is optional in the sense that when the self-test time is negligible and the self-test can be finished before the creation notification of circuitPackATT/Line is sent out, this notification is not necessary.)

ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	97

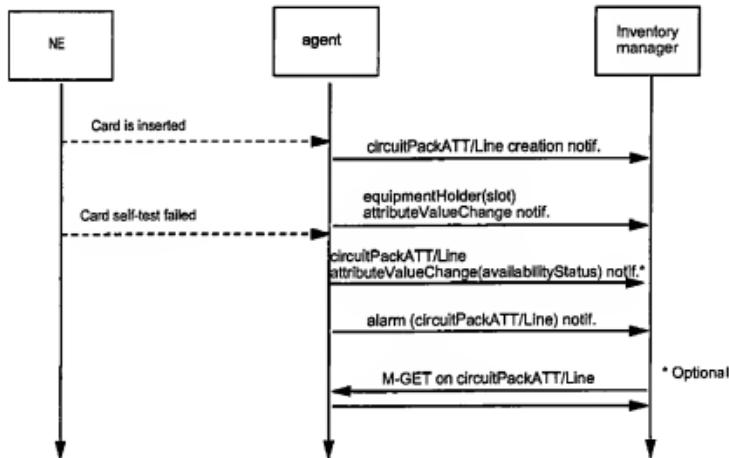
1320 NM R2.0

The inventory manager:

- Create the instance of circuitPackATT/Line in the database when receiving the creation notification.
- Send an M-GET on the circuitPackATT/Line.
- Change operationalState value of the created circuitPackATT/Line instance accordingly when receiving the stateChange notification from the agent.
- Change the availabilityStatus value of the created circuitPackATT/Line instance accordingly when receiving the attributeValueChange notification from the agent.

6.1.6 The new card is inserted (correct type, bad card)

The scenario describes that the new card of correct type is inserted into a slot for the first time, and the card fails its self-test.



The agent:

- Create the instance of circuitPackATT/Line and send the creation notification to the manager.

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ALCATEL USA			3AL 55650 1042 DTZZA	98

- Change the holderStatus value of equipmentHolder that contains the newly inserted card: holderEmpty --> inTheAcceptableList and send the attributeValueChange notification to the manager.
- Change the availabilityStatus value of circuitPackATT/Line: inTest --> failed, and send the attributeValueChange notification to the manager (The notification is optional in the sense that when the self-test time is negligible and the self-test can be finished before the creation notification of circuitPackATT/Line is sent out.)
- Change the value of the currentProblemList of the circuitPackATT/Line instance: (empty set) --> <appropriate Probable Cause/alarmStatus pair> and send the alarm (circuitPackATT/Line) notification to the manager.

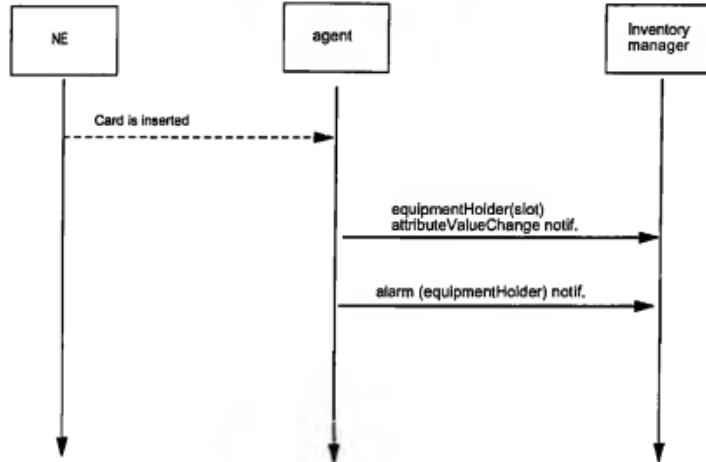
The inventory manager:

- Create the instance of circuitPackATT/Line in the database when receiving the creation notification.
- Change the availabilityStatus value of the created circuitPackATT/Line instance accordingly when receiving the attributeValueChange notification from the agent.
- Send an M-GET on the circuitPackATT/Line.

6.1.7 The new card is inserted (unacceptable type)

The scenario describes that the new card of unacceptable type is inserted into a slot for the first time.

ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	99



The agent:

- No instance of circuitPackATT/Line is created in its MIB.
- Change the holderStatus value of equipmentHolder that contains the newly inserted card: holderEmpty -> notInTheAcceptableList or holderEmpty -> unknown, and send the attributeValueChange notification to the manager.
- Send the alarm (equipmentHolder) notification (probable cause of Improper Circuit Pack Insertion) to the manager.

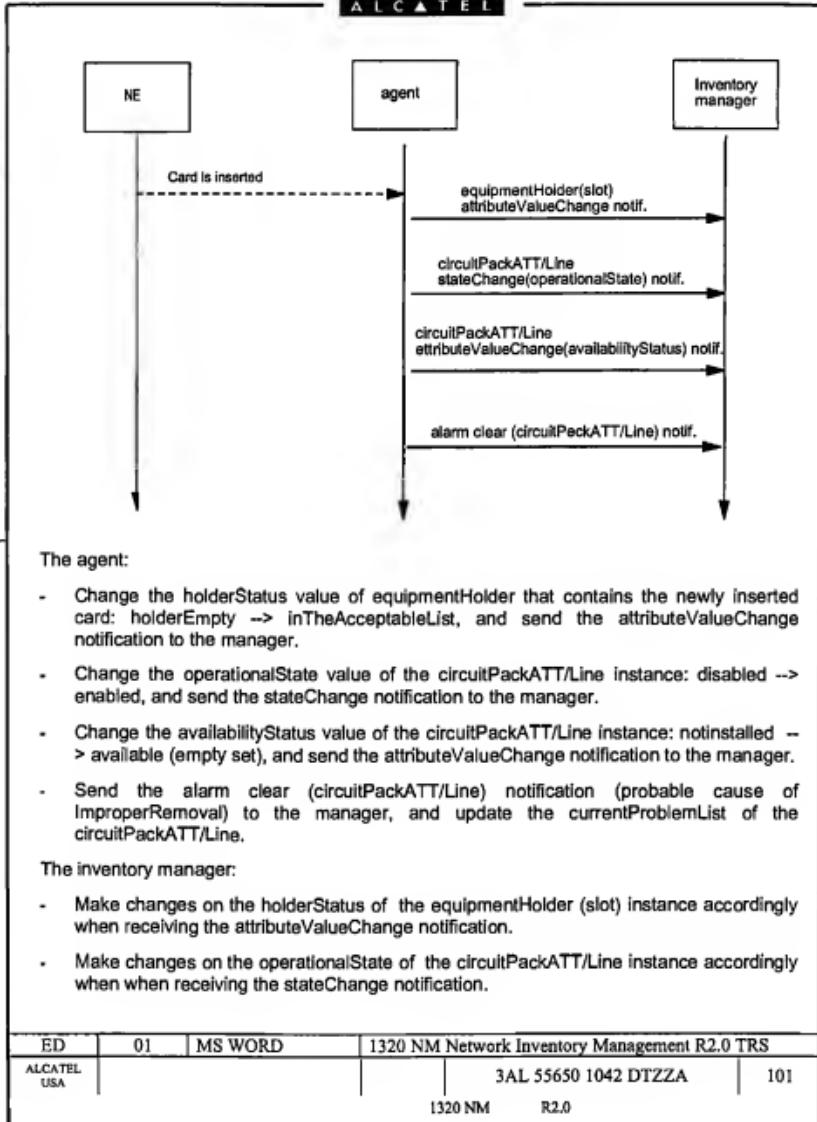
The inventory manager:

- No instance of circuitPackATT/Line is created in its database.
- Make changes on the holderStatus of the equipmentHolder (slot) instance accordingly when receiving the attributeValueChange notification.

6.1.8 The new card is inserted to a provisioned slot (correct type, good card)

The scenario describes that the new card of correct type is inserted into a already provisioned slot. An automatic self-test on the card will be conducted. The card passes its self-test.

ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	100



- Make changes on the availabilityStatus of the circuitPackATT/Line instance accordingly when receiving the attributeValueChange notification.

6.1.9 The new card is inserted to a provisioned slot (correct type, bad card)

The scenario describes that the new card of correct type is inserted into a already provisioned slot, and the card fails its self-test.



The agent:

- Change the holderStatus value of equipmentHolder that contains the newly inserted card: holderEmpty --> inTheAcceptableList, and send the attributeValueChange notification to the manager.
- Change the availabilityStatus value of circuitPackATT/Line: notInstalled --> failed, and send the attributeValueChange notification to the manager.
- Send the alarm clear (circuitPackATT/Line) notification (probable cause of ImproperRemoval) to the manager.
- Send an alarm (circuitPackATT/Line) notification (for the bad card) to the manager, and update the currentProblemList of the circuitPackATT/Line.
- Update the currentProblemList of the circuitPackATT/Line accordingly.

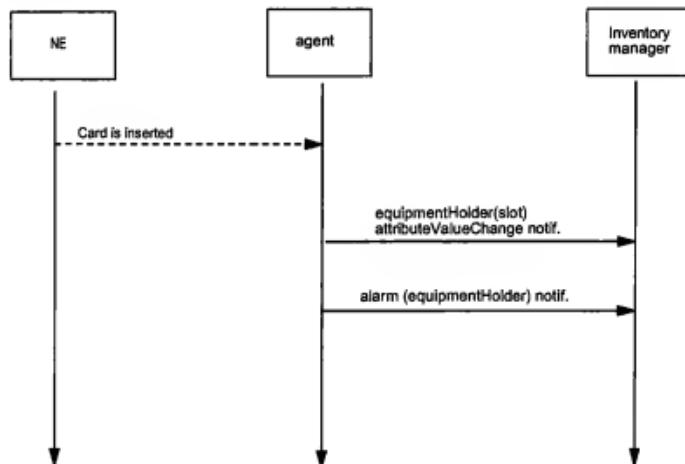
ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	102

The inventory manager:

- Make changes on the holderStatus of the equipmentHolder (slot) instance accordingly when receiving the attributeValueChange notification.
- Make changes on the availabilityStatus value of circuitPackATT/Line instance accordingly when receiving the attributeValueChange notification.

6.1.10 The new card is inserted to a provisioned slot (unacceptable type)

The scenario describes that the new card of unacceptable type is inserted into a already provisioned slot.



The agent:

- Change the holderStatus value of equipmentHolder that contains the newly inserted card: holderEmpty -> notInTheAcceptableList or holderEmpty --> unknown, and send the attributeValueChange notification to the manager.
- Send the alarm (equipmentHolder) notification (probable cause of ImproperCircuitPackInsertion) to the manager.

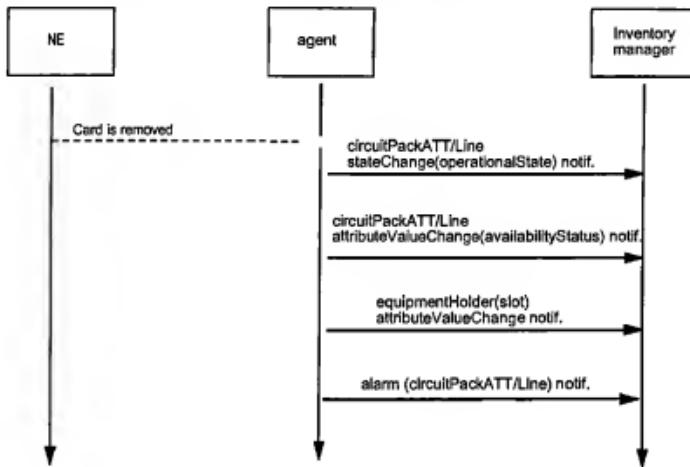
The inventory manager:

- Make changes on the holderStatus of the equipmentHolder (slot) instance accordingly.

ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA 1320 NM R2.0	103

6.1.11 The card is removed from its provisioned slot (good card)

The scenario describes that a good card is removed from its provisioned slot.



The agent:

- Change the operationalState value of the circuitPackATT/Line instance to *disabled*, and send the stateChange notification to the manager.
- Change the availabilityStatus value of the circuitPackATT/Line instance to *notInstalled*, and send the attributeValueChange notification to the manager.
- Change the holderStatus value of the equipmentHolder from which the card is removed: *inTheAcceptableList* --> *holderEmpty*, and send the attributeValueChange notification to the manager.
- Send the alarm (circuitPackATT/Line) notification (probable cause of *improperRemoval*) to the manager, and update the currentProblemList of the circuitPackATT/Line instance.

The inventory manager:

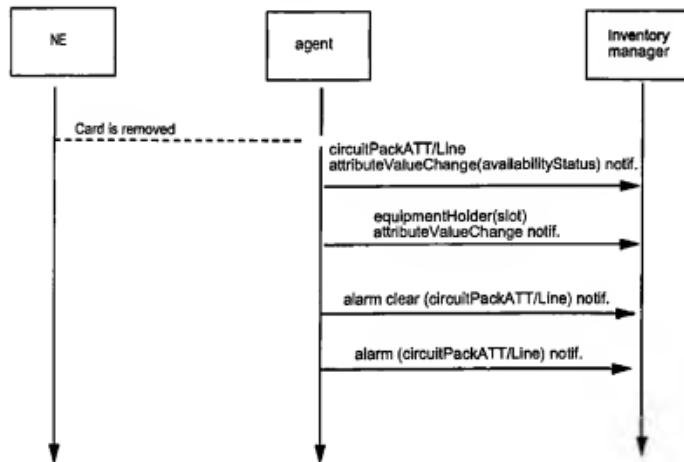
- Make changes on the operationalState of the circuitPackATT/Line instance accordingly when receiving the stateChange notification.

ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	.104

- Make changes on the availabilityStatus of the circuitPack/Line instance accordingly when receiving the attributeValueChange notification.
- Make changes on the holderStatus of the equipmentHolder (slot) instance accordingly when receiving the attributeValueChange notification.

6.1.12 The card is removed from its provisioned slot (bad card)

The scenario describes that a bad card is removed from its provisioned slot.



The agent:

- Change the availabilityStatus value of the circuitPackATT/Line instance to *notInstalled*, and send the attributeValueChange notification to the manager.
- Change the holderStatus value of the equipmentHolder from which the card is removed: *inTheAcceptableList* --> *holderEmpty*, and send the attributeValueChange notification to the manager.
- Send the alarm clear (circuitPackATT/Line) notification (to clear the bad card alarm) to the manager.
- Send the alarm (circuitPackATT/Line) notification (probable cause of *ImproperRemoval*) to the manager.

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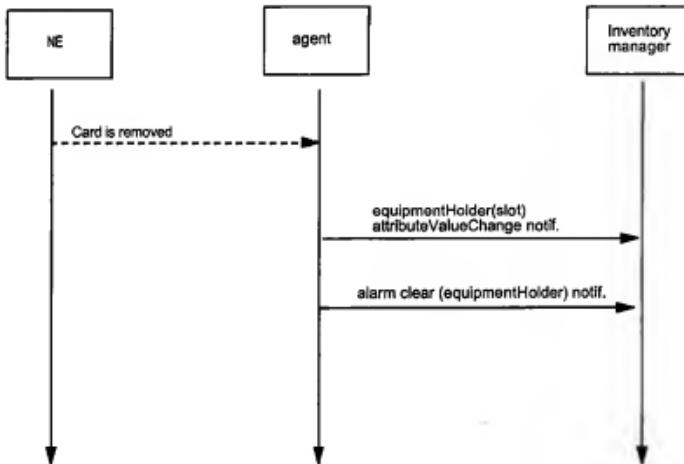
- Update the currentProblemList of the circuitPackATT/Line instance of the removed card accordingly.

The inventory manager:

- Make changes on the availabilityStatus of the circuitPackATT/Line instance accordingly when receiving the attributeValueChange notification.
- Make changes on the holderStatus of the equipmentHolder (slot) instance accordingly when receiving the attributeValueChange notification.

6.1.13 The card is removed from mismatched slot

The scenario describes that the card of incorrect type is removed from a mismatched slot.



The agent:

- Change the holderStatus value of the equipmentHolder from which the card is removed: notInTheAcceptableList --> holderEmpty or unknown --> holderEmpty, and send the attributeValueChange notification to the manager.
- Send the alarm clear (equipmentHolder) notification (probable cause of Improper Circuit Pack Insertion) to the manager.

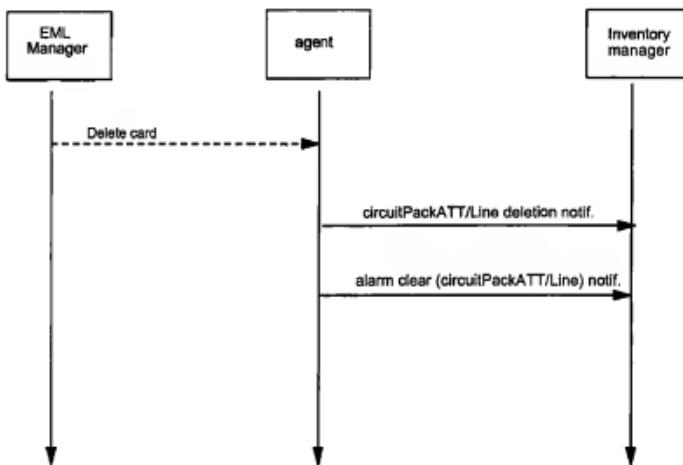
The inventory manager:

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ALCATEL USA			3AL 55650 1042 DTZZA	.106

- Make changes on the holderStatus of the equipmentHolder (slot) instance accordingly.

6.1.14 The card is deleted (after its removal)

The scenario describes the card deletion procedure that a card is deleted by the agent (after being physically removed from its slot). A card can only be deleted if the card's administrativeState is locked (future release).



The agent:

- Delete the circuitPackATT/Line instance in its MIB, and send the deletion notification to the manager.
- If the deleted instance is circuitPackLine, deletes all the instances of TPs supported by this circuitPackLine.
- Send alarm clear notification (probable cause of ImproperRemoval) to the manager.

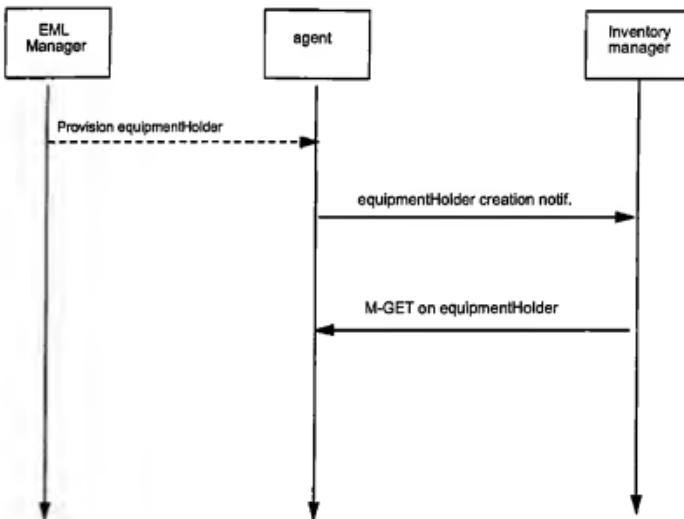
The inventory manager:

- Delete the circuitPackATT/Line instance in its database when receiving the deletion notification from the agent.

ED	01	MS WORD	I320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	107

6.1.15 The new bay or shelf is added

The scenario describes that a new bay or shelf is added to an NE.



The agent:

- Create the instance of equipment and send the creation notification to the manager

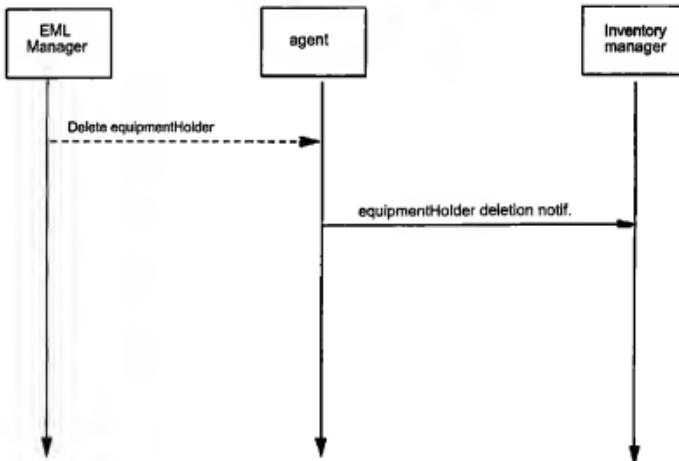
The inventory manager:

- Create the instance of equipmentHolder in the database when receiving the creation notification.
- Send an M-GET on the equipmentHolder.

6.1.16 The bay or shelf is deleted

The scenario describes that the equipment holder (bay or shelf) is deleted.

ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	·108



The agent:

- Delete the equipmentHolder instance in its MIB, and send the deletion notification to the manager.

The inventory manager:

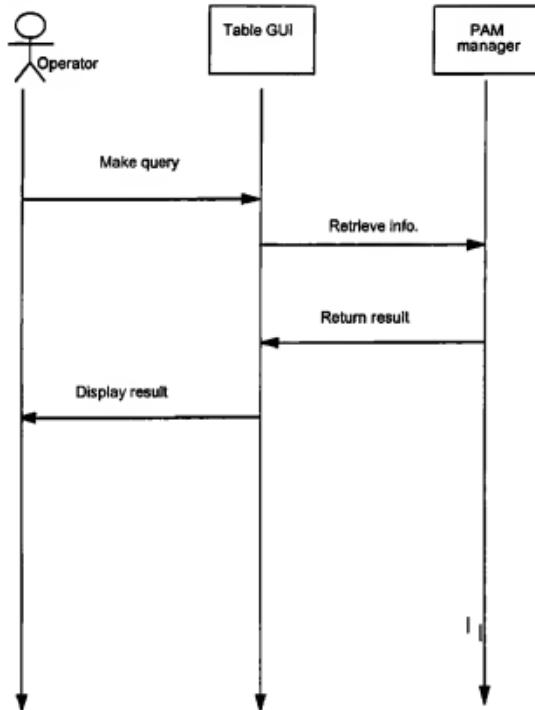
- Delete the equipmentHolder instance in its database when receiving the deletion notification from the agent.

N.B. According to the name binding rules defined in M3100 standards, the equipment holder can only be deleted if it has no contained objects.

ED	OI	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL USA			3AL 55650 1042 DTZZA	109

6.2 Scenarios for user interface

6.2.1 Inventory query



The operator:

- Make query on network inventory item(s).

The Table GUI:

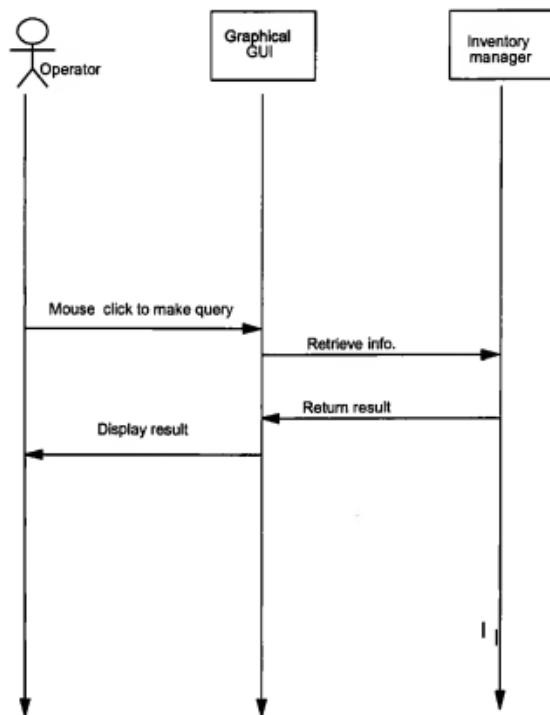
- Retrieve the information from the inventory manager's database.

- After receiving the result from the Inventory manager, display the result on the screen.

The 1320NM Inventory manager:

- Return the query result to GUI.

6.2.2 Shelf Graphical display



The operator:

- Move the mouse to /click on the specific display object of interest.

ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS		
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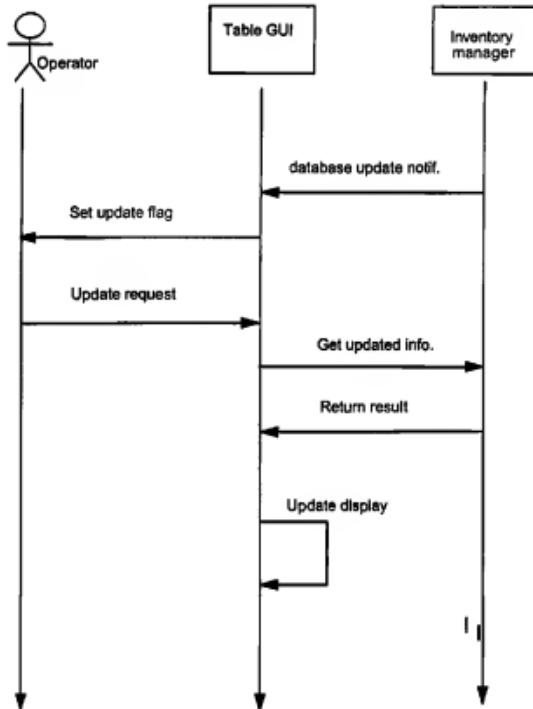
The Graphical GUI:

- Display additional information on that specific object.

The 1320NM Inventory manager:

None.

6.2.3 Inventory update on table GUI



The operator:

ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS		
ALCATEL USA			3AL 55650 1042 DTZZA	R2.0	112

- Request to update the display after the update flag is set.

The Table GUI:

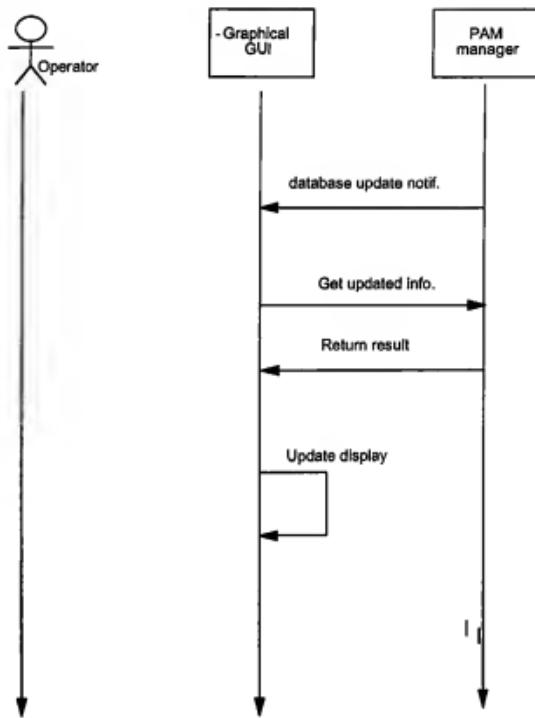
- Get the updated information from the inventory manager's database when receiving an update request.
- After receiving the result from the inventory manager, update the display on the screen accordingly.

The 1320NM Inventory manager:

- Send information update notification to the GUI whenever the interested items are updated in the inventory database.
- Return the updated information when receiving a request for updated information from the GUI.

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ALCATEL USA			3AL 55650 1042 DTZAA	113

6.2.4 Inventory update on Graphical GUI



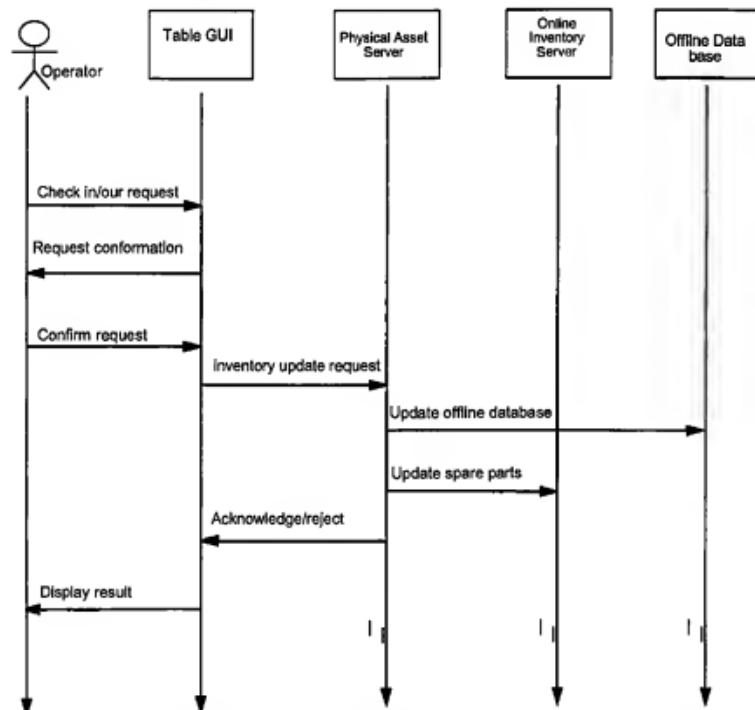
ED	01	MS WORD	1320 NM Network Inventory Management R2.0 TRS	
ALCATEL, USA			3AL 55650 1042 DTZZA	·114

After receiving the result from the inventory manager, update the graphical display on the screen automatically.

>The 1320NM physical asset server:

- Send information update notification to the GUI whenever the interested items are updated in the inventory database.
- Return the updated information when receiving a request for updated information from the GUI.

6.2.5 Inventory offline check in/out



The operator:

- Check in/out off-line inventory item(s).
- Confirm the request.

The Table GUI:

- Ask operator to confirm the check in/out request.
- After receiving operator's confirmation, send inventory update request to inventory manager.
- After receiving the reply from the inventory manager, display the result on the screen.

The 1320NM physical asset server:

- Send request to update the offline database.
- Update the corresponding spare parts.
- Acknowledge or reject.

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EXHIBIT "B"

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SERIAL NUMBER	REQUEST DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
P-102,611	7/16/00	YAO LIANG, ET AL	132,489

Title: ARCHITECTURE AND DESIGN FOR AN INTEGRATED
TELECOMMUNICATIONS EQUIPMENT MANAGEMENT
SYSTEM

Correspondence Address:

LARRY J. MOSKOWITZ
ALCATEL
1909 K STREET, N.W. SUITE 800
WASHINGTON DC 20006

Art Unit	Paper Number
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[Title 35, United States Code (1952) Sections 184, 185, 186]